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**AIR CONDITIONING AND  
REFRIGERATION**

**News**

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## INSIDE DOPE

by **GEORGE F. TAUBENECK**

**Story of the Week**  
Another Story of the Week  
'Small Business' Needs Help  
Compete—Don't Restrict  
Equity Capital Needed  
Tax Reforms  
As Others See Us  
We're In a Top Spot  
Opportunity?

### Story of the Week

Discovering that his gardener had been stealing everything that wasn't red hot or nailed down, the country gentleman was forced to dismiss him.

"But whut'll I be tellin' the wife and kiddies?" whined the gardener.

"Tell you what I'll do," mused the employer. "I'll give you a good reference so that you'll have no trouble finding another job."

An hour later the estate-owner placed in his ex-gardener's hand the following reference:

"I hereby declare that the bearer of this note, who has been employed by myself as a gardener for three years, was able to get more out of my garden than any man heretofore employed here."

### Another Story of the Week

Old B. P. Jones was lecturing his granddaughter about the immodesty of today's young women.

"It's a shame!" he tiraded. "Young girls are gettin' too bold. They know too much for their own good. When I was a young feller, the gals I was sparkin' could blush, and did."

"Why, grandfather, you never told me," exclaimed the girl, throwing him a sly glance. "What did you used to say to them?"

### 'Small Business' Needs Help

The number of small businesses in the country today, per thousand population, is as large as at any time in our history (and, numerically, there is no downward trend in sight) according to A. D. H. Kaplan whose report, "Small Business: Its Place and Problems," is sponsored by the Research and Policy Committee of the Committee for Economic Development.

The flat statement, however, does not rule out the probability that the next few years will see a weeding out among the small businesses that mushroomed in the wartime and postwar sellers' market.

While small business has maintained its strength in numbers, it has lost some ground in the proportion it does of the nation's business.

Three main factors will affect its future vitality, according to Kaplan: improved management, greater availability of equity capital, and a more equitable long-range program of federal taxation.

While reviewing the present state of small business, Kaplan points proudly to its importance in a healthy free enterprise economy and in our democratic way-of-life.

In 1929, for example, small business enterprises represented the source of 11 million jobs. If it is to contribute its future share to high productivity and employment, we should look to small business for 14 million jobs.

If that goal is to be realized, these preliminary steps should be undertaken:

1. Colleges, especially schools of business administration, should lay less stress on the acquisition of specialized skills for big business. They

(Concluded on Page 6, Column 1)

## American Coils and Brunner Mfg. Unite

UTICA, N. Y.—Brunner Mfg. Co. here has acquired the controlling interest in American Coils Co., Newark, N. J., through an exchange of stock.

Brunner manufactures refrigeration condensing units, and air compressors for automotive and industrial purposes. American Coils Co. manufactures commercial coils and condensers.

The companies will be operated as separate concerns, American Coils as a subsidiary of Brunner, with separate manufacturing and sales organizations.

American Coils, with its manufacturing facilities in Newark, will supply Brunner with condensers and other components, and also will make a 5-hp. package air conditioner which Brunner will put on the market in 1949.

However, American Coils will continue to merchandise its "Amcoil" line of commercial refrigeration coils and unit coolers, and a line of heating convectors, through its own sales organization.

A new board of directors elected for American Coils Co. includes Michael Parcaro, H. A. Thibault, J. J. Brody, Stanley Davis, George Mathews, and A. G. Zumbun. Zumbun is chairman of the board of Brunner Mfg. Co.

Officers of American Coils Co. are Michael Parcaro, president and treasurer; H. A. Thibault, vice president in charge of sales; John J. Brody, vice president in charge of manufacturing; and Stanley Davis is secretary.

## Some Peerless Plates To Drop 40% In Price

CHICAGO—Price reductions of up to 40% plus payment of freight charges on "Orange and Black Standard" flash plates has been announced by Peerless of America here.

Mel W. Knight, general sales manager, explained that the company had gone through its entire flash price list and picked out the most popular plates and labeled them standards.

Lists of "standard" plates are being sent out to company customers, Knight said, informing them of the price reduction and the fact that the company will carry these sizes in stock.

All prices, he asserted, are f.o.b. Chicago, freight allowed, via lowest common carrier to freight station nearest destination within the United States.

## Apex Lays Off 300, Plans 4-Day Work Week

CLEVELAND—Because of a sharp drop in factory shipments of Apex appliances in October and early November, C. G. Frantz, president of Apex Electrical Mfg. Co. here, has announced a layoff of 300 employees at plants here and in Sandusky and the adoption of a four-day work week.

Frantz added that 200 more of the 1,500 employees working in these plants will probably be laid off the first of the year and the remainder will be put back on a five-day work week.

He scored the 20% down payment provision of Regulation W as causing the slow-up in sales and said that he had wired the Federal Reserve Board asking for a modification of this provision and telling them that it has caused wholesale layoffs in the appliance industry.

Apex manufactures washing machines, vacuum cleaners, ironers, and dishwashers.

## Copeland Will Build Kelvinator Open-Type Units

SIDNEY, Ohio—Harry E. Thompson, president of Copeland Refrigeration Corp., announces that an arrangement has been worked out with Kelvinator Div. of Nash-Kelvinator Corp. for Copeland to manufacture Kelvinator open-type refrigeration condensing units.

These Kelvinator open-type condensing units will be built by Copeland in its Sidney factories in accordance with Kelvinator specifications, according to a statement made by Thompson.

Kelvinator's machine tool facilities and other equipment previously used in producing these open units at Detroit have been transferred to Copeland plants at Sidney, Thompson further revealed.

Shipments will be made to and through established Kelvinator distribution channels directly from Sidney. Orders for these units, and all Kelvinator commercial refrigeration merchandising activities, will continue to be handled in Detroit under the direction of H. C. Patterson, Kelvinator's commercial refrigeration sales manager, and his regular staff members.

An interesting sidelight on this arrangement is the fact that George Mason, president and chairman of the board of Nash-Kelvinator Corp., was president of Copeland two decades ago.

The two firms are among the oldest in the household and commercial refrigeration industry, both dating 'way back to the time of the first world war.

## N.Y. Dealers Slash Prices Up to 20%

NEW YORK CITY—Price cutting by as much as 20% on household refrigerators, even nationally known brands, by independent appliance dealers here was reported by the *New York Times*.

This is the first large scale price-cutting on refrigerators that has occurred here since the war, the *Times* said.

Reason given for the current outbreak is the heavy inventories these dealers are holding as the result of the sharp fall sales slump. Department stores were said not to be participating in the wave of price-cutting.

One dealer commented, according to the *Times*, that distributors could not control the situation by threatening to cut off the supplies of errant dealers because those dealers were now much more interested in getting rid of stock they have on hand than in future deliveries. Another dealer claimed that the situation would probably continue until sometime in the spring.

## Brand-Name Appliance Demand Seen Steady; Hotpoint, Inc. Will Continue Allocations

CHICAGO—After allowances for seasonal lags on certain items, the demand for Hotpoint and some other well-known brands of electrical appliances is about the same as during the past year, Leonard C. Truesdell, vice president of marketing, Hotpoint, Inc., reported following a trip to major distribution points throughout the country.

At the same time, Truesdell said his firm's appliances would continue on allocation to distributors at least during the first quarter of 1949.

Washing machines have come into

## Sears Cuts Coldspot Prices by 2-10% To Stimulate Sales

CHICAGO—Sears, Roebuck & Co. has announced a price reduction of from 2 to 10% on seven of eight models of its Coldspot refrigerator in an effort "to stimulate sales and to help maintain factory production."

These reductions, company officials said, apply only to the organization's retail stores and not to its mail order division.

Only model not to be reduced in price is the 7-cu. ft. "Space-saver" which remains at \$199.95.

The retail price of 11-cu. ft. refrigerators was dropped from \$349.95 to \$324.95 and from \$319.95 to \$294.95. The three 9-cu. ft. models were lowered from \$319.95 to \$294.95, and \$284.95 to \$274.95. The 7-cu. ft. units were reduced from \$249.95 to \$244.95 and \$229.95 to \$224.95.

## Helminak Resigns as NARC Plans Move

CLEVELAND—Resignation of J. J. Helminak as executive vice president of the National Association of Refrigeration Contractors has been announced by NARC.

NARC said the resignation resulted from a decision by the board of directors to move the national headquarters from Cleveland to 228 North LaSalle St., Chicago.

"In selecting this new location, the directors feel that Chicago is more centrally located and is the ideal place for the national office," it was explained.

Helminak's successor has not yet been announced. Miss Edna Berggren, executive secretary of the Chicago association, is acting as executive secretary of the national group.

At the same time, it was announced that NARC's directors have decided to hold the 1949 convention in Atlantic City in conjunction with the All-Industry Show.

## Reed Heads Sales At Artkraft Mfg.

LIMA, Ohio—Promotion of William (Bill) Reed from assistant sales manager of Artkraft Mfg. Corp. here to general sales manager has been announced by Morton L. Clark, president-treasurer, who formerly also directed sales.

In his new capacity, Reed will be in charge of Artkraft's entire sales program, including both refrigeration products and neon and store-front signs. Reed joined the firm's sales department in January, 1948, and was appointed assistant sales manager in July in recognition of his work in setting up a dealer organization for the nationwide distribution of Artkraft specialty refrigeration units.

## Lively Sessions Feature 44th ASRE Meeting

**Council Votes To Retain  
'Abstracts' In Present  
Form with Economies**

WASHINGTON, D. C.—Lively interest in the technical sessions as well as the entertainment features marked the forty-fourth annual meeting of the American Society of Refrigerating Engineers held at the Statler hotel here last Monday through Wednesday, Dec. 6 to 8.

An innovation at this meeting which packed one of the large meeting rooms was the Domestic Engineering Conference in which household refrigerator problems were discussed on Tuesday afternoon.

In addition to the regular events, including the Monday night frolic and Tuesday's annual dinner-dance, many members and guests toured points of interest in Washington.

And at the welcome luncheon Monday noon, Earl O. Shreve, president of the U. S. Chamber of Commerce and a former vice president of General Electric Co., discussed "The Responsibility of the Refrigeration Industry."

Of the regular technical sessions there were two that evoked considerable discussion. On Tuesday morning G. P. Marcy of Westinghouse described a mathematical approach to determining length of capillary tubes which was followed by a paper detailing laboratory experiments on capillaries prepared by M. M. Bolstad and R. C. Jordan of the University of Minnesota.

The final session Wednesday morning was devoted to frozen foods, with four papers being presented on freezing rates and storage temperatures as they affect the quality and appearance of the product.

"Storage Temperature as Related to Certain Characteristics of Frozen Pork" was outlined by Dr. Gladys Vail of Kansas State college; Dr. J. G. Woodroof of Georgia discussed storage temperatures on various vegetables; effects of fluctuating storage temperatures in the range of 0° to -10° F. were outlined by Andrew Hustrulid and J. D. Winter of the University of Minnesota, while (Concluded on Back Page, Column 2)

## IN THIS ISSUE

Is licensing of refrigeration contractors a good thing—for the public, for the industry, for the contractor? Some say yes, some say no. Both have their say on pages 24-30.

A little time spent in caring for fans will pay big dividends in satisfactory operation of air conditioning systems, Roy A. Stipp, Buffalo Forge, stresses in an article on how to do it. See page 21.

Few things are more important to a profitable business than labor cost and parts inventory control. Some practical suggestions and sample forms useful in setting up such controls appear on pages 18 and 19.

"It's time to dust the cobwebs off the brief cases, sales tools, and sales know-how used during prewar days." So advises one of three executives who offer—on pages 10-12—down-to-earth ideas on how to sell room air conditioners, and air conditioning and commercial refrigeration equipment.

Departments: What's New, page 23. . . Key to Air Conditioning, page 14. . . Editorial, page 16. . . World Trade News, page 20.

(Concluded on Back Page, Column 1)



Products of  
**Refrigeration Research**  
are  
**Quality Products**  
— Always —

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10 to 23 Doris  
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## Electrimatic

Valves, Driers, Strainers,  
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insist on  
genuine

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products

**MARLO-HEAT TRANSFER**  
Since 1925

## Virginia Smelting Co. Shifts New York Office

NEW YORK CITY—The New York offices of Virginia Smelting Co. have been moved from 76 Beaver St. to new, larger, and more centrally located quarters at 270 Madison Ave., Suite 1201, it was announced by W. F. Luckenbach, Jr., manager of industrial sales. Home offices of the company are in West Norfolk, Va.

## Number of New Firms In Business Is Leveling Off

WASHINGTON, D. C.—There were still more firms starting up in business than were going out of it during the first half of the year, the U. S. Department of Commerce reported recently, but the number of new firms entering business has slowed considerably.

The total number of retail and service firms rose moderately during that period, the department noted. But during the second quarter, the number of liquor stores, eating and drinking places, and hotels had started to decrease.

The department said that 179,000 new businesses started during the first six months of this year as compared with 238,000 in the same period last year and 356,000 in the first half of 1946.

The number of discontinued businesses rose from 86,000 last year to 136,000 this year.

There were 3,880,000 businesses in operation at the end of June, the department revealed, as compared to 3,070,000 in June, 1945.

## NLRB Orders Employee Elections In Seeger Jurisdictional Dispute

ST. PAUL—The National Labor Relations Board has ordered collective bargaining elections before the end of December at the Seeger Refrigerator Co. here. Two employee elections were ordered to aid in settling a controversy between three A.F.L. unions.

The A.F.L. Refrigerator Workers union claims to represent the firm's employees. Two other unions, however, seek to represent certain types of employees.

The NLRB ordered an election among Seeger electricians to decide whether they prefer local 20459 or the A.F.L. International Brotherhood of Electrical Workers, local B-110.

Action of the millwrights and electrical groups in attempts to raid the refrigerator local was condemned in a resolution at the Minnesota Federation of Labor convention in Winona last summer.

An election also was ordered for maintenance mechanics who must choose between the Refrigerator Workers union and the A.F.L. Twin Cities Carpenters District Council.

## 10-Cent Copeland Dividend

SIDNEY, Ohio—Directors of the Copeland Refrigeration Corp. here recently declared a regular quarterly dividend of 10 cents per share payable Jan. 3, 1949, to stockholders of record as of Dec. 14, 1948, according to Frank J. Gleason, vice president and treasurer.

## Dept. Store Sales Stay Ahead Of '47 Despite Slight Decline

WASHINGTON, D. C.—A 6% decline in department store sales across the country for the week ending Nov. 20 as compared with the corresponding week last year has been reported by the Federal Reserve Board.

Declines in 11 Federal Reserve districts ranged from 2% in Cleveland to 10% in San Francisco. Percentage declines by district were as follows: Boston 7, New York City 8, Philadelphia 7, Cleveland 2, Richmond 7, Atlanta 4, Chicago 3, St. Louis 4, Kansas City 4, Dallas 7, and San Francisco 10.

For the year to Nov. 20, however, sales were up 6% over last year.

## Glassed-In Case Boosts Candy Sales 400% for Maine Drugstore

BIDDLEFORD, Me.—A refrigerated showcase, especially designed for boxed chocolates and other deluxe candies, has resulted in a 400% increase in candy sales for Morin Drugs here.

The big refrigerator consists of a slant-front Thermopane glass case on top of a 6 ft. by 4 ft. porcelain enamel cabinet which contains two large stock drawers for reserve stock, and the refrigerating condenser.

Both the glass case section, which will hold three dozen packages of candy, and the drawer type reserve units are kept refrigerated to between 35° and 40° F. at all times.

Owner Jerome Morin installed the box just ahead of the hot summer tourist season, when the store heretofore gave up candy sales as a bad job. The ability to show the same attractive packages as during the winter months resulted in much buying interest all through the summer, and sales have never dropped since.

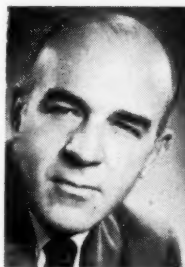
To attract attention, a sign on top of the case reads "The Candy In This Cabinet Is Kept Fresh Because the Cabinet Is Refrigerated."

## Frigidaire Commercial Dealer

AUSTIN, Tex.—A new local dealer for Frigidaire commercial and air-conditioning products is Willie Kocurek's "Famous Brands" Appliance Store, 1818 San Jacinto St.

## Donley, Brundage Named To Key Posts In G-E Air Conditioning Dept.

BLOOMFIELD, N. J.—Harold B. Donley has been appointed manager of marketing and Henry M. Brundage, former sales vice president of Weber Showcase & Fixture Co. of Los Angeles, has been named manager of the automatic heating division, in the air conditioning department of the General Electric Co. here, Harold F. Smiddy, general manager of the department, has announced.



H. B. Donley

In his new appointment Donley is responsible for direction of sales and merchandising activities of General Electric's air conditioning department. Among the activities falling under his jurisdiction will be product and market sales, the field sales organization, market research, advertising and sales promotion, product planning, as well as commercial engineering.

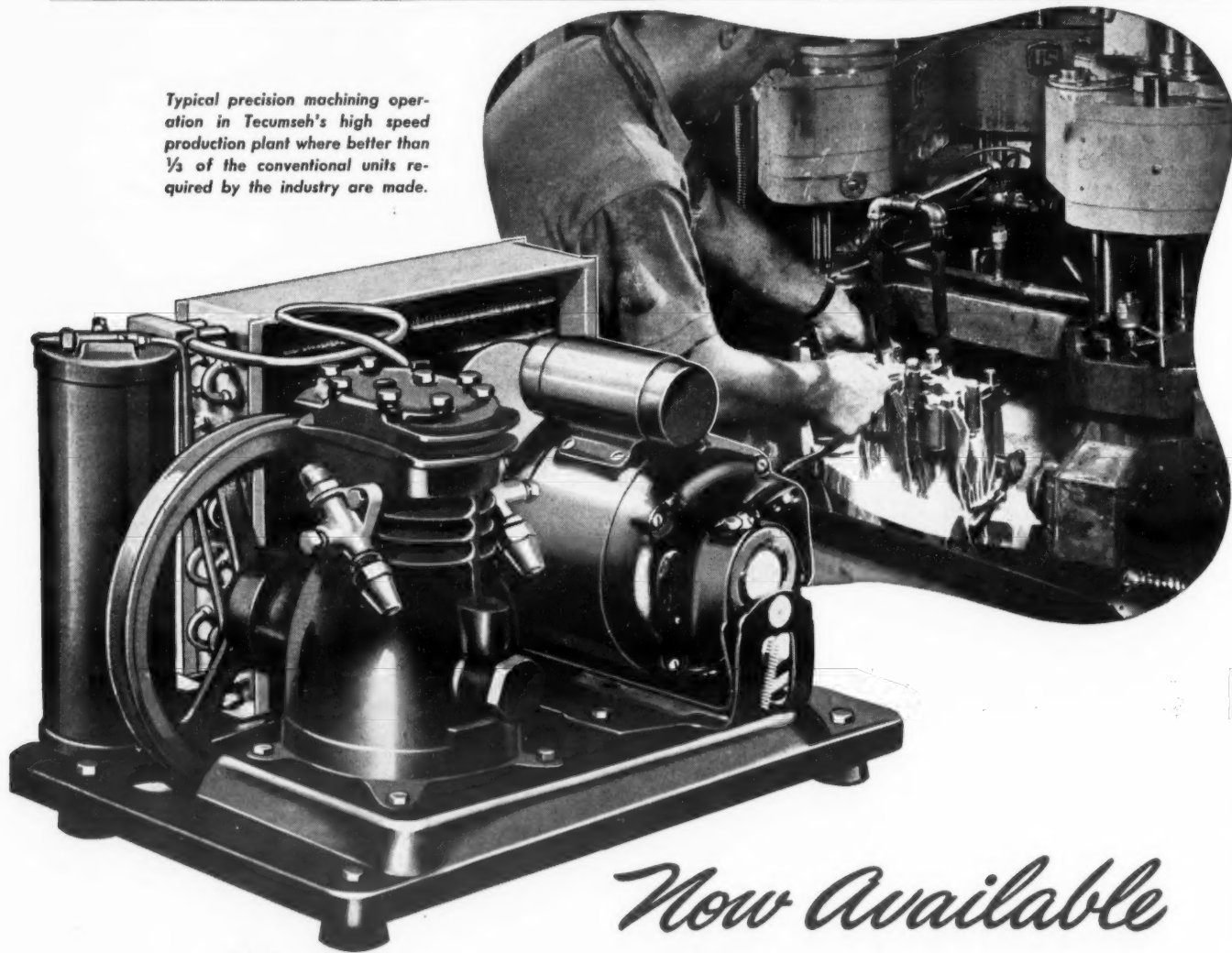
Brundage, prior to World War II, headed his own firm, the H. M. Brundage Co. of Norfolk and Richmond, Va., distributor of refrigerators, heating equipment, and commercial and domestic appliances.

During World War II, Brundage was successively deputy chief of plumbing and heating division, chief of appliance division, and deputy regional director in New York City of the War Production Board. Later he served in the capacity of regional director of the Smaller War Plants Corp.



H. M. Brundage

Typical precision machining operation in Tecumseh's high speed production plant where better than 1/3 of the conventional units required by the industry are made.



*Now Available*

**for IMMEDIATE DELIVERY**

**Chieftain**

**1/4 through 1/2 H.P. Conventional Condensing Units!**

Right! We've worked hard for a long time to be able to say it . . . but it's true again at last! Through recent plant expansion and improved production facilities, famous Chieftain Conventional Condensing Units are now available for immediate delivery . . . in unrestricted quantities . . . to manufacturers of complete refrigeration equipment.

Take Chieftain 1/4 and 1/2 H.P. Air-Cooled Commercial Units, for example. Designed primarily for self-contained construction, they cover capacity and performance requirements of a wide range of commercial applications . . . frozen food chests, beer coolers, beverage vendors, milk coolers and many others. They're built to the highest standard of quality yet achieved by the industry . . . with triple inspection and careful selective fitting of all parts. Smooth, quiet, dependable in operation, they give you maximum in top performance . . . with freedom from field service . . . at a minimum first cost. Write today for complete information . . . and specify "Chieftain" Conventional Condensing Units!



**TECUMSEH PRODUCTS COMPANY**

Tecumseh, Michigan

World's largest  
independent producer  
of Compressors and  
Condensing Units

## New "P-H" FLORIST CABINETS Keep Flowers Fresher-Longer



## Patented Grad-U-Matic Air Conditioning Does The Trick!

The exclusive Grad-U-Matic cooling system scientifically retards blooms and keeps cut flowers salubly fresh for longer periods of time. Cooling from the bottom upwards, the gentle action of its controlled air flow eliminates cold air blast on flowers and plants.

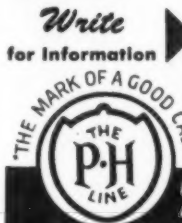
Beautifully designed black porcelain interiors and exteriors—modern fluorescent lighting—adjustable, chrome edge, glass shelves—and non-fogging Triple Thermopane glass doors provide the finest possible setting for your floral display. Available in 2, 3 and 4 door models.



**CHOICE OF 50  
REACH-IN CABINETS  
IN ALL PORCELAIN  
OR STAINLESS STEEL**  
Available with solid or glass doors—self-contained or remote control—with or without Ice Maker Coils. Sizes range from 20 Cu. Ft. to 90 Cu. Ft.



**DRY  
BVERAGE  
COOLERS**  
Equipped with Bell-Away doors for fast service—100% protection against frost—longer life. Available in 6', 8' and 10' sizes—Remote or self-contained.



**PUFFER-HUBBARD**  
MANUFACTURING COMPANY  
Grand Haven, Mich. Established 1898

MANUFACTURERS OF REACH-IN CABINETS, DAIRY-DELICATESSEN CASES, BEVERAGE COOLERS, DOUGH RETARDERS, FLORIST CABINETS AND WALK-IN COOLERS



# Norge is Ready for the Challenge of 1949

**With the Most Outstanding and Complete Line of Major Appliances under One Name in the Industry—backed by . . .**

**DYNAMIC NATIONAL MAGAZINE ADVERTISING**

**PLUS POWERFUL LOCAL NEWSPAPER ADVERTISING**

**ADDED TO 7 SURE-FIRE PROMOTION PROGRAMS**

**IN ADDITION TO NEW AND SENSATIONAL SALES AIDS**

**AND A HARD-HITTING SALES TRAINING PROGRAM**

**—all designed to assure Norge dealers of a record-breaking year**



**A MESSAGE TO RETAILERS  
from**

**W. S. "Bing" Law**

**NORGE GENERAL SALES MANAGER**

Norge has aggressively met 1949's challenge with an all-new, feature-packed, quality line . . . backed by the most outstanding merchandising program in all Norge history!

This program assures dealers, who sold more Norge products in 1948 than ever before, of even greater opportunities in 1949!

And here's how!

We know full well that to place a top-flight line of high grade quality products on the market is not enough. These products have to be supported by a powerful *selling plan*—better than ever before.

And that is just what we have done.

Norge dealers are offered in 1949 a dynamic, well-timed national advertising campaign designed to arouse terrific interest in Norge products . . . in all parts of the country.

Tied-in with this national advertising program is a huge local newspaper advertising plan.

These forceful selling ads, at the retail level, will inspire action, bring in prospects, bring to a head the "Norge desire" which has been created in the national ads.

Add to these advertising campaigns, 7 sure-fire promotion programs, a host of sales aids and a country-wide sales training plan and you have an unbeatable combination . . . a combination topped off by the mighty sales appeal built into each new Norge 1949 quality product.

This in a nutshell is Norge's new merchandising program . . . a program that spells success in 1949!

*W. S. Law*

*General Sales Manager*

**SEE  
NORGE  
BEFORE YOU BUY**

**A BORG-WARNER INDUSTRY**

**Norge Division Borg-Warner Corporation**

**Detroit 26, Michigan**

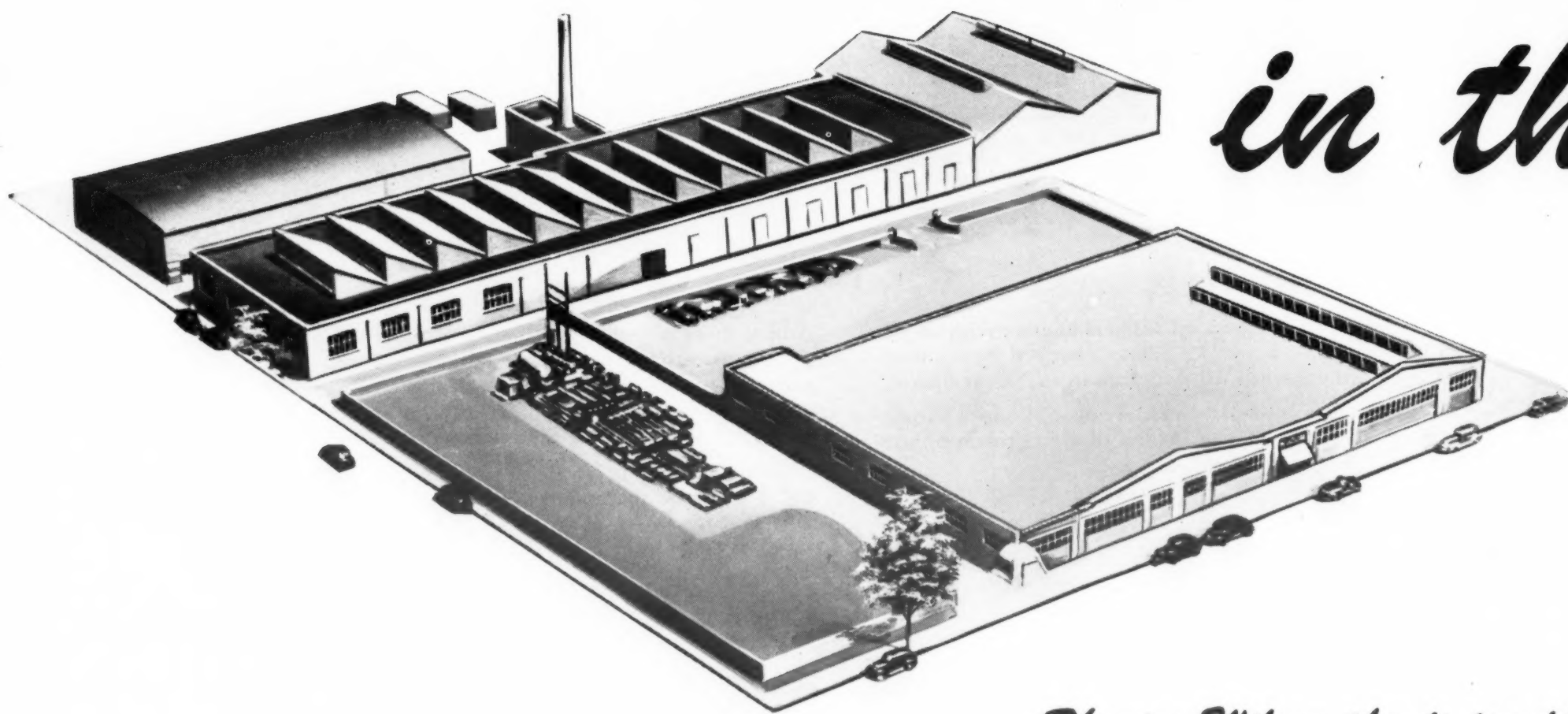
**In Canada: Addison Industries, Ltd., Toronto, Canada**



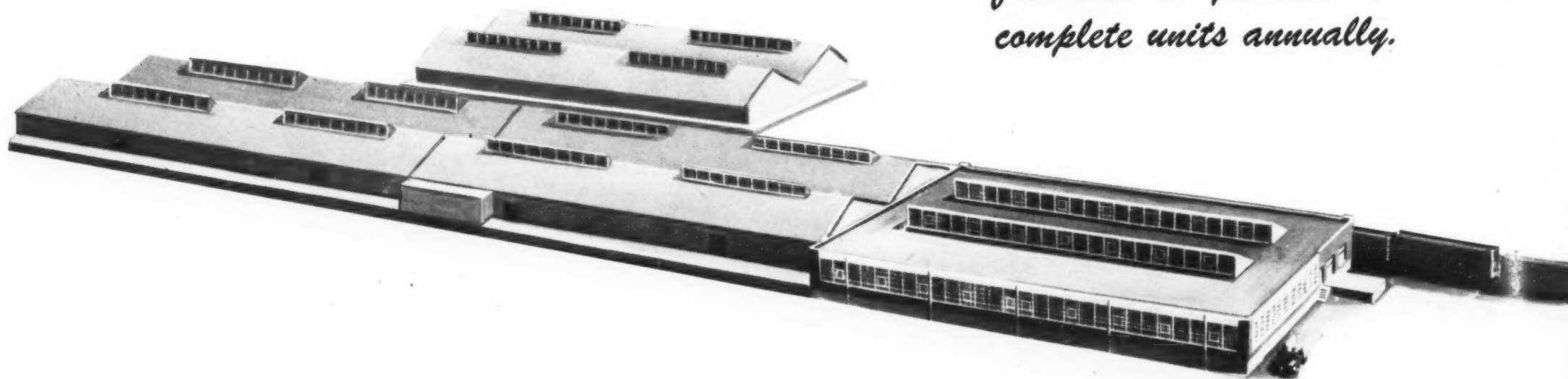
# WIL

**REFRIGERATION**

*Announces*  
*in the*



*The new Wilson plants provide facilities to produce 40,000 complete units annually.*





# SON

## INCORPORATED

# the Hottest News Refrigeration Field

The recent fire at our Smyrna plant has *actually* put us ten years ahead. Now our production methods and assembly lines have been completely modernized . . . our equipment is the best on the market. We are now a new plant *but* with the experience and ability that has made us a recognized leader in the manufacture of milk coolers, home and farm freezers, and commercial refrigeration equipment.

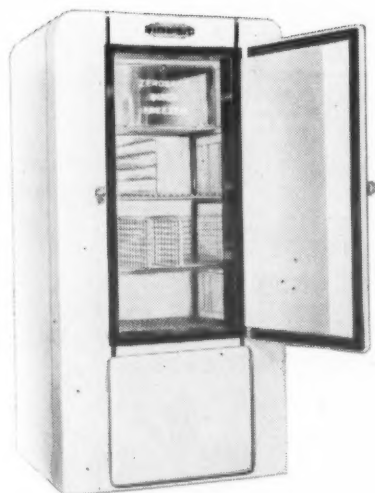
Wilson pioneered the reach-in design in freezers. And now with new and greater facilities, we are "pushing on" to manufacture the most modern and efficient line of milk coolers and farm freezers that materials and engineering ability can produce.

We wish to thank our many friends, dealers and distributors for their consideration and cooperation during our time of readjustment. Now we are prepared to justify your confidence with a larger, better, more complete line of freezers and milk coolers.

*Distributors everywhere—write for available franchises. Dept. M-1.*

WILSON  
REFRIGERATION, INC.  
Division of Wilson Cabinet Co., Inc.  
Smyrna, Delaware

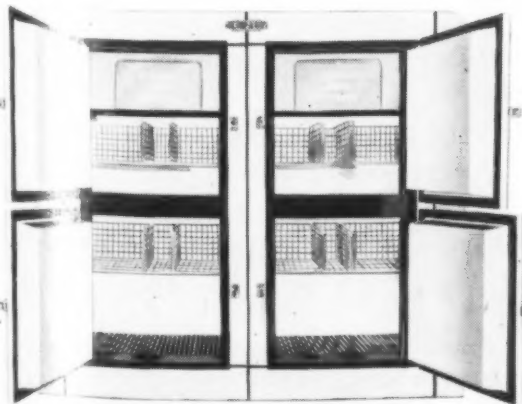
**FARM MILK COOLERS AND FREEZERS  
WALK-IN REFRIGERATORS  
COMMERCIAL REFRIGERATION PRODUCTS**



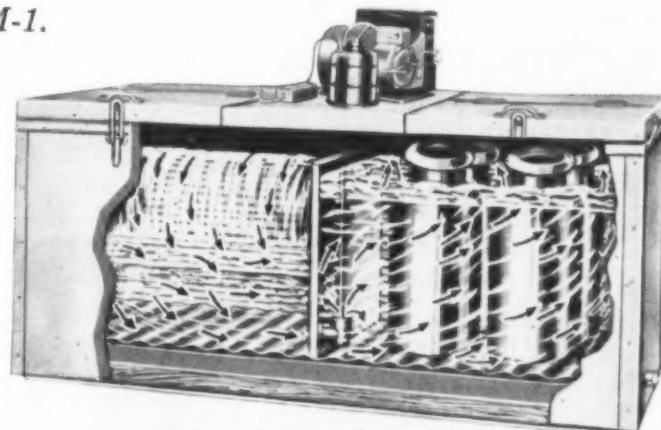
FF-15 Zero°Safe  
15 Cubic Feet



S10A Household Refrigerator  
10.2 Cubic Feet



FF-60 Sectional Model  
Storage Capacity 2009 lbs.



Zero°Flow Farm Milk Cooler



## INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)

should emphasize a course-of-study that will encourage their graduates to undertake responsibilities and opportunities of small business management and ownership.

2. Trade associations should place more emphasis on helping their members to become alert competitors, and less emphasis on protective legislation. More attention needs to be given to organizing trade information so that it is directly usable by the small businesses. Trade publications, also, should go further in adapting the information they supply to the needs of small businesses.

3. Business organizations such as Chambers of Commerce should conduct continuing local educational programs for the benefit of small business enterprises. They can help, for example, by sifting and recasting national business information—such as that provided by the U. S. Department of Commerce—so that its relevance to local markets is apparent.

4. Manufacturers should aid their small business customers by supplying, through business paper contacts, helpful information about merchandising their products. Manufacturers in a number of fields have developed useful means also for helping small customers gauge their financial position.

### Compete—Don't Restrict

Fear of competition, often stemming from lack of knowledge, frequently has been allayed by small businessmen through seeking protection from competition. This "protection" takes the form of trying to keep someone else out of "their" market.

There are few such walls that will not be got around by alert competition. The small businessman will strengthen himself by learning how best to compete for, not how to restrict markets. In that connection, operations misguidedly sponsored by local operators, ought to be removed.

Commenting on the often-quoted small business mortality figures, the C. E. D. report observes that they are misleading, in that many closings are mere changes of ownership, while other supposed "failures" represent a switch from self-employment to employment by others, or mergers or voluntary retirement.

### Equity Capital Needed

A lack of access to elastic equity capital is one of the major handicaps to small business stability. Commercial banks, the main source of small business loan capital, cannot enter into equity financing or even extended term financing.

Capital banks under the Federal Reserve System are proposed as a possible method of supplying this equity financing. The British Industrial and Commercial Finance Corp., and similar sources of elastic investment funds on the European continent are reported as having success in this field. Commercial banks could become stockholders in such capital pools, along with public-

spirited individuals and groups who seek to expand the over-all business volume and possibilities of their communities.

Community funds for local business development can be helpful in some areas in providing equity capital. But the relative scarcity of such funds to date indicates that they can not meet the broad needs of small business financing.

### Tax Reforms

As to tax reforms that would aid small business, Kaplan says:

"Analysis of business profits has made it clear that small business tends to experience a sharper drop in income when business is generally low and a sharper rise in profits when business activity is high, than is the case with more broadly based big enterprise. Hence small business has more than proportionate dependence on any characteristics of the tax system which tends to sustain the total of employment and the aggregate demand for goods and services."

Extension of the carry-forward of business losses from the prevailing two years to five years, a provision since incorporated in the Tax Revision Bill of 1948, is an exemplary provision. The principle of averaging taxes over good and bad years—sound for all types of business, big and small—is often vital to the survival of small business.

A system of averaging of individual incomes over a given period would serve, likewise, to eliminate present discrimination against persons whose incomes are irregular... a tax system that has as little repressive effect as possible upon investment in small business must, be

regarded as essential for the survival and growth of small business.

A main deterrent to constructive action to aid small business is the fact that the problems of small business are too often made political issues, and even political hobby-horses.

Not only are small businesses in many instances the suppliers as well as the customers of big business, but the development of large-scale manufacture has increased the opportunities for small businesses that are essential adjuncts to the big business.

In the final analysis, though, only the prescience and imaginativeness and rugged individuality of small business entrepreneurs can save them from being swallowed up by "big business" and State Socialism.

Fortunately, this country of ours breeds and fosters and "eggs on" individualistic entrepreneurs who'd rather be independent than secure. From them we draw our perpetually self-renewing national strength, vigor, and vitality.

### As Others See Us

In substantiation of the preceding claims, please read this:

"I have been in your country several times, but the more I see of America, the more I am impressed by the energy and enterprise of your people. They are truly a great nation."

"I am almost like a child about your American trains. All the way down from N. Y. I kept looking for new gadgets. The food was wonderful, and the air conditioning, it was out of this world."—Edw. W. Mitchell, London financier.

And here's a pertinent quotation from a Frenchman, the redoubtable Andre Maurois. In his latest book, "The Art of Living," Maurois writes: "Once during a discussion of these essential qualities of a statesman in the presence of William Pitt, someone mentioned industry, another energy, still another eloquence. Pitt said that, on the contrary, the essential quality for a prime minister was patience."

"He was right, not only for a prime minister, but for all whose duty it is to lead groups of men."

"Stupidity is a factor to be reckoned with in human affairs. The true leader always expects to encounter it and prepares to endure it patiently so long as it is normal stupidity. He knows that his ideas will be distorted, his orders carelessly executed; and that there will be jealousy among his assistants."

"He takes these inevitable phenomena into account, and instead of attempting to find men without faults, who are non-existent, he tries to make use of the best men at his disposal—as they are and not as they ought to be."

And that's the American system in operation.

### We're In a Top Spot

John Crosby, the syndicated columnist who criticizes radio programs, made this observation:

"Somewhere about the middle of NBC's recent hour-long documentary, 'Marriage in Distress,' narrator Ben Grauer spoke out with some vehemence against the contemporary and peculiarly American habit of acquisitiveness."

"We drive ourselves harder and harder," Grauer said, "to be able to afford cars, refrigerators, and home freezers—objects once considered luxuries but now found to be necessities."

"This acquisitive passion," Grauer lamented, "is one of the reasons why so many modern marriages founder."

"It's hardly a new idea but it's a decidedly strange one to find on NBC, which devotes much of its time—virtually all of it, in fact—to stimulating a thirst for cars, refrigerators, and home freezers."

We can't agree with Ben Grauer and John Crosby that automobiles, refrigerators, and home freezers disrupt family life. On the contrary, we can present overwhelming evidence to prove that these aids-to-better-living cement family ties.

But it does do our heart good to realize that refrigerators and freezers—rather than television sets or something else—are bracketed with automobiles as the most-demanded specialty items by people who want to "keep up with the Joneses" (or keep ahead of them).

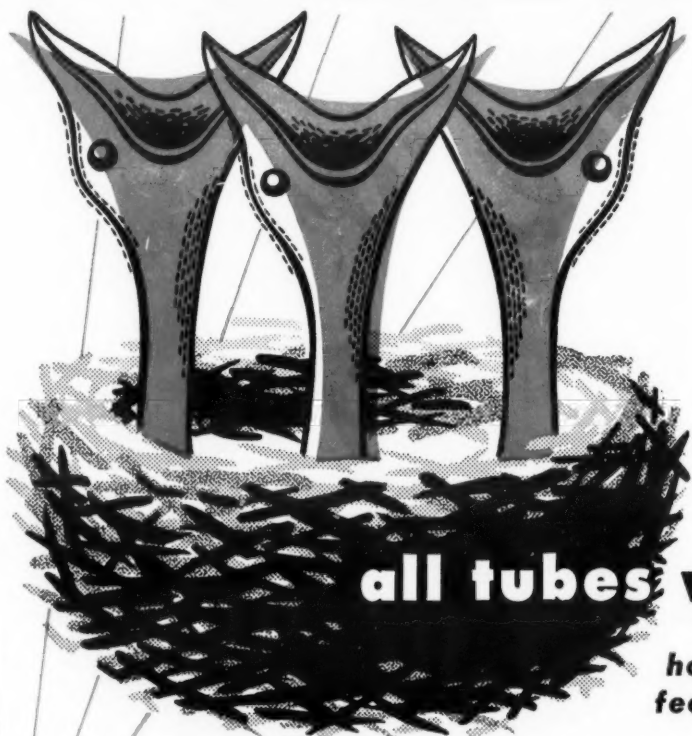
Subscribers, please note.

### Opportunity?

From a recent issue of the revered *Wall Street Journal* we call this classified advertisement:

"Patent for Sale. I have just perfected an electric lock pick which will open any pin tumbler night latch, padlock, or automobile lock in two seconds. Would like to sell patent to person who will market it."

Unemployed specialty sales managers may be interested. Warning: there's nothing anent the specialized profession of safe-cracking to be found in our latest book, "The Marshal's Baton."



**all tubes wide open!**

how will you  
feed 'em equally?

A valve with separate distributor permits a single coil circuit to "flood through" to the valve's thermal bulb. The bulb and valve respond, throttling all other coil circuits. This "starves" much of the evaporator surface, often cutting capacity as much as 1/3.

Alco Multi-Outlet Thermo Valves prevent "short-circuiting" or poor distribution. In thousands of installations they have increased capacity 1/4 to 1/3 by feeding circuits equally.

- Refrigerant is accurately metered at point of expansion within valve body, before separation of gas and liquid
- All circuits are equally fed regardless of load changes
- Positive, stable control—no "hunting" or "cycling"

Result: less running time—lower operating costs. Available at your wholesalers for all refrigerants and applications: 1/2 to 50 tons FREON-12, 2 to 36 outlets. Ask for our Bulletin 180.



ALCO  
MULTI-OUTLET THERMO VALVES



Designers and Manufacturers  
of Thermostatic Expansion  
Valves; Evaporator Pressure  
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Float Valves; Float Switches.

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**THE NEWEST  
ADDITION  
TO THE COLDIN FAMILY**



MODEL 8-SC.

### "COLDIN JR." COUNTER TOP DISPLAY CASE

The ideal Cabinet for small Dairy Stores, Grocery Stores, Delicatessens, Restaurants and Bakeries.

- GLOSSY FORMICA COUNTER TOP AND SCALE STAND
- PORCELAIN EXTERIOR AND INTERIOR
- HARD RUBBER DOUBLE-GLAZED SLIDING DOORS



Write for Illustrated Literature and Specifications.

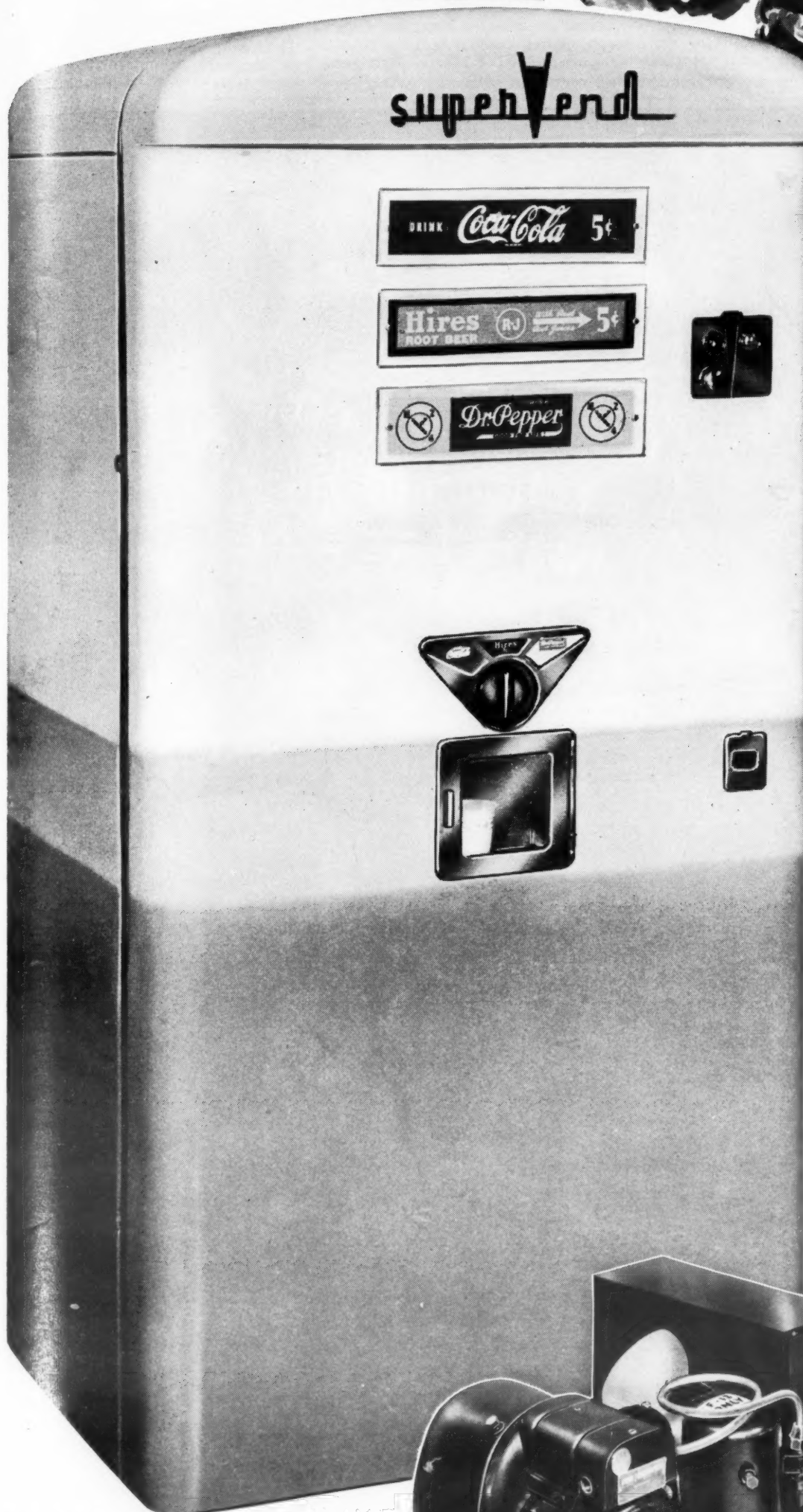
YOUR KEY TO BETTER REFRIGERATION

**COLDIN CABINET CO., Inc.**

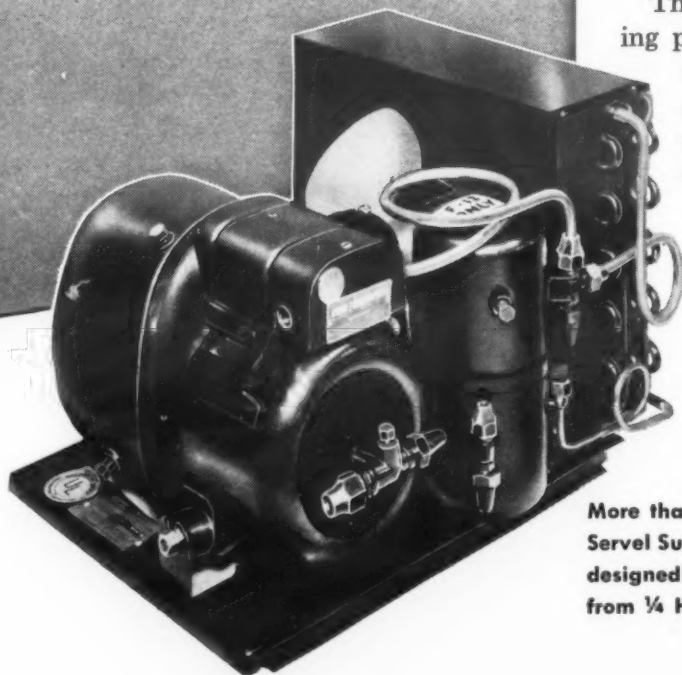
2800 Webster Avenue, Bronx 58, N. Y. Tel. SEdwick 3-833



# Here's your market



Three-flavor "cold cup" drink dispenser illustrated by courtesy of SuperVend Corporation, 2506 Cedar Springs Avenue, Dallas, Texas. The Electric Refrigeration Division of Servel Inc., manufactures condensing units only. These are available everywhere through prominent fixture manufacturers and dealers.



## Automatic Beverage Dispensers Can "Quench Your Thirst" For Sales!

The trend toward fast service is producing new habits, new products, new markets. Americans now spend over 500 million dollars annually for merchandise sold through automatic vending machines. And among the newest of these machines is the cold drink dispenser. These machines not only offer the consumer a selection of many fountain favorites but also are ingeniously geared to make change!

The market for soft drink vending machines is tremendous. These attractively designed and decorated dispensers have been found to be very profitable when located at any point where people congregate or where there's heavy pedestrian traffic.

The compact "sealed package" of cooling power offered by Servel Supermetic condensing units has proved a fitting companion for the equally compact design of these modern beverage coolers. The simplified construction

and outstanding performance features of Servel's Supermetic provide assurance of dependable, economical operation and the constant temperatures needed to keep drinks cold. Every moving part of the Supermetic is force-lubricated, constantly protected by Servel's unique oiling system. Troublesome mechanisms have been eliminated. Servel Supermetic has no belts, no seal or couplings to cause unnecessary maintenance expense. Supermetic is simple to install, easy to check.

Fractional horsepower models of Supermetic are available in all sizes from  $\frac{1}{4}$  HP through  $\frac{3}{4}$  HP. Larger hermetic sizes range from 1 HP to 3 HP. Servel offers the most complete hermetic line available today. For complete details, write for your free copy of an illustrated folder, "Servel Supermetic." Address Servel, Inc., Division ER, 2812 Kentucky Avenue, Evansville, Indiana.

# Servel Inc.

ELECTRIC REFRIGERATION DIVISION • EVANSVILLE 20, INDIANA

More than a hundred thousand satisfied users testify to the high quality of Servel Supermetic hermetically sealed condensing units, the most versatile line designed for every popular commercial refrigeration requirement. Sizes range from  $\frac{1}{4}$  HP through 3 HP. Illustrated is a fractional HP air-cooled Supermetic.



## G-E Expands Production<sup>1</sup> Of Kitchen Equipment At Scranton, Pa. Plant

SCRANTON, Pa.—Expansion of its plant here for the manufacture of dishwashers, electric sinks, and cabinets and the closing of its plastics plant were announced recently by the General Electric Co.

Expansion activities include construction of a \$300,000 addition that will add 60,000 sq. ft. of space to the dishwasher, sink, and cabinet plant and negotiation for the purchase of a three-acre tract on which will be built a 40,000-sq. ft. addition.

Nearly all of the expanded space will be used to manufacture dishwashers, Neil C. Mulcock, dishwasher plant manager, declared.

Closing of the plastics plant, said to have been operating at a loss for several months, is the result of a decreasing demand for plastic products, according to Halsey J. Sorrell, plant manager.

Sorrell said that he has been transferred to the company's recently purchased plastics plant at Decatur, Ill., as manager.

Approximately 190 persons lost their jobs with the closing of the plant. Mulcock indicated that company policy of giving furloughed dishwasher makers and sinkmakers first preference on jobs would prevent the absorption of the plastics employees in the dishwasher plant.

## Pitt Is V. P. In Charge Of Finance at Philco

PHILADELPHIA—Dr. Courtney Pitt has been elected to the newly-created office of vice president—Finance, of Philco Corp., and will serve as the chief financial officer of the company, William Balderston, president, has announced.

Dr. Pitt joined Philco in 1941 and in January, 1947, was appointed economist in charge of the division of economic research. He is a member of the American Economic Association and the Research Council of the Chamber of Commerce of Philadelphia.

## Mission Appliance Sales Hit All-Time High for September

LOS ANGELES—Consolidated net sales of the Mission Appliance Corp. here for the quarter ending Sept. 30 reached the highest level for any September quarter in the company's history, according to Albert F. Sutton, president.

Sales for the quarter, the first of the company's new fiscal year, were \$1,676,725 as compared with \$1,475,238 for the same period last year.

Consolidated net profit for the same period was \$108,362, or 44 cents per share of common stock outstanding, as compared with \$60,954, or 25 cents per share for the 1947 quarter.

## Temple Firm Leases Building For Freezing of Chinese Foods

BROOKLYN—A two-story building at 65 S. Eleventh St. here which contains 5,000 sq. ft. of floor space has been leased by Temple Frosted Foods, Inc., who will use it for the manufacturing and freezing of Chinese foods.

## U.S. Dept. of Agriculture Is Conducting 3 Research Projects Into Uses of Locker Plants, Farm Freezers for Storing Foods

WASHINGTON, D. C.—Three research projects into uses of locker plants and farm freezers for the purpose of storing foods, particularly meats, are currently being conducted under the Research and Marketing Act for 1948-49, the U. S. Department of Agriculture announced recently.

One project is a study of the processing of farm products by cooperative association in locker plants being conducted by the Farm Credit Administration.

A second is looking into the development of functional requirements of equipment for freezing and holding perishable foods produced on the farm for home consumption and local marketing as well as the determination of farm home refrigeration requirements.

This project is being undertaken by the Bureau of Plant Industry,

Soils and Agricultural Engineering, and Human Nutrition and Home Economics.

The third project is a cooperative one between the Bureau of Agricultural Economics and nine north central states to make a regional study of the place of frozen food locker plants and home freezer units in the over-all pattern of livestock and meat distribution and consumption.

Commenting on the first project, the Department of Agriculture said that the FCA is making a detailed analysis of the livestock slaughtering and processing operations in a representative group of cooperative locker plants. The analysis will cover the operations of 70 locker plants in 13 states.

A first objective of the study is to get a general picture of the facilities and equipment required and the nature of the slaughtering and process-

ing operations looking toward improvements in edible and inedible by-products.

As part of the second project, in which other Agricultural Research Administration agencies and at least one agricultural experiment station in the south and the west will cooperate, experimental freezers will be built and tested under farm conditions.

Farm freezers already in use will be studied as to efficiency, size, insulation, and compressors, coils, and controls used. Some plans for home-built freezers are already available, the agricultural department said, but data on their performance characteristics and adequacy are needed.

The department commented that commercial refrigeration with a capacity for aging or freezing a beef, lamb, or hog carcass is not available or suited to most farms. Refrigeration

tors and home freezers suitable for urban families are not big enough to handle large cuts of meat, a can of cream, or a crate of eggs.

The department said, concerning the third project, that information on the slaughtering, processing, storage, and wholesale and retail distribution of meat will be helpful to the industry.

Last year, it added, information on about 500 locker plants was obtained from interviews with plant operators. A mail survey also has been made of locker patrons and home freezer owners. Information from all sources is first summarized by states and later will be used in regional reports.

## Advance Appliance Chartered To Install Air Conditioning

TAMPA, Fla.—Advance Appliance, Inc. here, has obtained a charter from the secretary of state to install air conditioning equipment. Authorized capital stock is 50 shares, no par value. Incorporators: Sam F. Graziano, John B. Knight, and Lila A. Bright.

"I like your ice cream...  
it's better quality and  
always hard-frozen..."

YEAR 'ROUND  
Ice Cream  
IT'S DELICIOUS

A Leader in the Industry

odorless

Jarrow...  
Refrigerator Door Gaskets  
Are Again Made From  
Crude Rubber

Always Demand These  
Quality Gaskets

JARROW PRODUCTS  
420 N. LA SALLE ST. CHICAGO 10, ILLINOIS



## Cooperative Freezer Clinics Provide Salesmen with Facts To Boost Sales

LOS ANGELES—A series of home freezer demonstrations for dealer sales personnel was recently staged cooperatively by the Southern California Radio & Electrical Appliance Dealers Association, home freezer distributors, the Department of Water & Power of the City of Los Angeles, and the Southern California Edison Co.

Arranged to cover a wide area of Southern California from Ventura to Pomona, the clinics were designed to provide salesmen with all the essential facts necessary to vigorously push the sale of home freezers.

Distributor representatives discussed such subjects as home freezer sales opportunities—profit-wise, savings to be gained from use of a home freezer, and sales tips. They also handled question-and-answer panels.

Home Economists Mercedes Gaffney of the Department of Water & Power and Ruth Stoffer of Amana

Society demonstrated proper use of the home freezer, emphasizing money, time, and work-saving features.

For example, it was shown how a housewife can prepare meals several days in advance, arrange the food on plates, cover them properly, and store them in the freezer. As needed, each plate is removed and warmed, ready to serve.

Again, it was shown how it is much more economical to make several pies at one time instead of just one or two; those not used immediately can be wrapped and put in the freezer for future consumption. It was pointed out that the same applies to bread, soup broth, chili, and many other items.

Too, salesmen were reminded to point out the considerable savings resulting when a quarter or half of beef is purchased. With the year-end holidays in mind, the salesmen were

## Stage Setting for Demonstrations



Above is the stage setting employed for the home freezer clinic sponsored in southern California by the Southern California Radio & Electric Appliance Dealers Association and other cooperating groups.

also told that leftover fowl can be stored in the freezer and served later as cold snacks.

Proper wrapping and use of the correct type of wrapping material

was stressed. Various materials were discussed, followed by a demonstration of wrapping procedure.

A color film, "A Surprise for Janie," wound up the program. This

film dramatizes the need for a freezer in the modern home and contains many sales hints.

That demonstrations such as these do increase sales is testified to by both distributors and dealers. A more tangible check on the value of demonstrations is the results reported by two stores.

Store A held a demonstration for its customers one evening and sold eight freezers at the conclusion of the meeting. Store B, a chain, staged a demonstration for several dozen sales people and the following week, freezer sales increased 100%. According to the store, the increase was due to the knowledge gained by its sales force at the demonstration.

An important factor in all demonstrations was that all frozen foods were cooked on the spot and served to the audience.

## Appliances Almost Tops On Women's Xmas List

NEW YORK CITY — American women want household appliances for Christmas almost as much as they want new clothes and twice as much as they want jewelry, a recent survey conducted in 31 cities by National Analysts, Inc. has revealed.

Of all the women questioned on what they would like most, within reason, for Christmas, 18.4% named electrical appliances. Three per cent of the men also wanted appliances most.

Getting more specific, the women rated washing machines at the top of their list. Then came refrigerators, vacuum cleaners, electric mixers, toasters, electric roasters, and ironers. When it came to ranges, the ladies showed a 2-to-1 preference for electric cooking.

Refrigerators and washing machines topped the male Christmas lists.

## R. F. Pulver Heads North Central Electrical Group

MINNEAPOLIS — R. F. Pulver, vice president of the Minnesota Power & Light Co. in Duluth was recently elected chairman of the North Central Electrical Industries, replacing H. E. Young who had headed the organization since its inception in 1936.

The organization was formed to promote the development of the industry and its products.

Carl T. Bremicker of the Northern States Power Co. succeeded Young on the board of directors and became first vice chairman. Other officers are A. H. Kessler, executive secretary; and L. G. Mample, treasurer.

New directors are: C. J. Christopher of the Minnesota Retail Hardware Association, William Ritt of Ritt Electric Center, D. E. Ford of Northland Electric Supply Co., Glenn Rowell of M.E.I.A., Harry Davis of Electrical Jobbers Equipment Co., Paul Schorr, Sr. of Commonwealth Electric Co., Ralph Moudry of Square D Co., W. Arthur Starbird of Starbird Electric Co., and William Stuefer of Stuefer Co.

## Hoffman Supply Moves

SPRINGFIELD, Mo. — Hoffman Supply Co., refrigeration parts wholesaler here, will hold a grand opening in its new location Dec. 17.



## The McCary Signal Light

Prevents Refrigeration Losses  
Needs No Servicing  
Absolutely Foolproof

Ideal for use on walk-ins, reach-ins, display cases, ice cream cabinets, soda fountains, home freezers, floral boxes, refrigerated trucks, etc. Adjustable from -10° to +80° F.

Contact your local wholesaler

McCARY MANUFACTURING CO.  
2823 Mobile Street El Paso, Texas

"Yes...we buy the best ice cream, and keep it in Frigid-Freeze cabinets..."

The customer is impressed with FRIGID-FREEZE... the equipment that puts new "buy" appeal into ice cream and sends sales soaring wherever it's installed. So step up demand in more of your "stops" and get set for higher gallonage figures with the profit-building FRIGID-FREEZE line: the trail blazing open-top "Spot-Special", the large capacity glass top models with VitaVision pictures, and a complete line of standard, stainless steel top ice cream cabinets... built for heavy duty service.

# Frigid-Freeze

REFRIGERATION CORPORATION OF AMERICA  
NEWARK 5, NEW JERSEY • A DIVISION OF NOMA ELECTRIC CORPORATION



# Panel Discusses Ideas for Sales on Air Conditioning, Commercial Equipment

## 'Seek, Sell, and Serve' Creed Must Supplant Find 'em, Fool 'em, Forget 'em Idea--Krall

By J. W. Krall, Tyler Fixture Corp., Niles, Mich.

The franchised refrigeration equipment dealer who possesses the necessary qualifications to properly cover the territory and to do a good job for the manufacturer, must first secure assistance from the manufacturer that makes it possible for the dealer and his organization to become thoroughly familiar with the complete line of commercial refrigeration products and their application, as well as the policies of the manufacturer. Then with the assistance of the factory representatives, the dealer organization is taught sales presentation of the equipment, its various applications, and its limitations.

These demonstrations include a definite sales presentation outline that will guide the salesmen and provide ample opportunity to completely cover the product or products. A workable outline that has met with considerable success is as follows:

1. The need
2. How and why the company he represents can supply that need best
3. Usage and desire points
  - a. Display and increased sales
  - b. Proper preservation—temperature
  - c. Ease of servicing—capacity
  - d. Sanitation
  - e. Low cost of operation

- f. Ease of erection
- g. Accessibility
- h. Beauty and eye appeal
- i. Low initial cost
4. Proof—examples—testimonials—photographs
5. Profit for the customer.

After a dealer organization is qualified to properly present the product, a survey of the sales territory is made and broken down into various types of businesses. Sales promotion material is then directed into the sales territory, backed up by local advertising, which should properly tie in with national advertising on the part of the manufacturer.

Dealer salesmen should then be assigned to their prospective territories to canvass and develop prospects that will terminate into sales. Canvassing and developing prospects that will terminate into sales of commercial refrigeration equipment entails much more than calling on meat markets and grocery stores. In every nook and cranny of this great land of ours and on every main street in the U.S.A. there are scores of prospects for commercial refrigeration equipment—often in places that many of us have been overlooking.

Let's take a birdseye peek of a typical "main street," whether in

## Offering Suggestions for Equipment Sales



J. F. Floreth (second from left) of Westerlin & Campbell Co., Chicago, discourses on methods of selling large air conditioning jobs in the "Equipment Sales and Merchandising Methods" panel discussion during the N.A.R.C. sessions. Others participating were (left to right) H. E. Wheeler, Air Comfort Corp., Chicago; J. W. Krall, Tyler Fixture Corp., Niles, Mich.; and Russell S. Penn, Talbert-Thomas Co. of Michigan, who served as moderator.

your town or mine. At the right we have a typical grocery store and market. Let's start with him and see what can be done to replan this merchant's store. Not just to sell him one or two display cases—but to work out a complete modernization plan to boost this merchant's sales and profits. Such a plan necessarily involves the use of many

different types of commercial refrigerators and display cases.

Next we have a bank. What would we sell to a banker? Why not sell him a low-temperature cabinet for his home? And the same applies to the shoe store owner and the proprietor of the ladies ready-to-wear shop.

Next in line is a typical bar and tap room where bottled beverages are sold. Take a look at this equipment—if he is still serving wet bottles, he's a cinch for a new dry beverage cooler. If he serves food, sell him a reach-in cabinet, too.

### Sell the Main Street Theater

Then we have the candy store where you can show the owner how to boost his ice cream sales by using a self-service low-temperature case.

And the main street theater, too, can be sold a low-temperature freezer for ice cream bars, cones, and frozen candy bars.

And don't pass up the hardware dealer, the department store, the farm implement dealer, or the appliance store that is doing an outstanding job. They make good prospects for many commercial refrigeration items.

All stores on main street are good commercial refrigeration prospects; hotels, restaurants, institutions, diners, grocers, meat markets, supermarkets, dairy and delicatessen stores, candy shops, drugstores, colleges, taverns, road-side inns, hospitals, and theaters. Jot these prospects in your notebook and add many more to them.

Make a survey of your town—build up mailing lists, a prospect follow-up system, literature supply, and all necessary sales tools—call your salesmen together, and start a concentrated sales drive. That's the way to assure added sales in 1949.

### Salesmen Will Specialize

In developing sales personnel, the dealer will find that a very low percentage of his sales personnel will be well qualified to handle the entire line.

As salesmen become grooved, they usually develop and take a liking to certain items in the line; the reason being they have become expert and successful in selling these particular items.

The dealer can easily check this unbalanced job by watching his monthly sales figures, and when laxity occurs on moving certain items, he must develop additional personnel to specialize in and take up this slack.

A percentage of trade-ins on new sales is gradually increasing, and in most cases it is definitely the deciding factor on making the sale. It is, therefore, highly important that someone in the dealer organization, that is not connected with the sales department, be given the responsibility of determining and passing upon trade-in equipment.

Trade-in equipment is as a rule obsolete, and has served its usefulness. The sharp prospect will never admit that the proposed trade-in equipment has reached the stage of obsolescence, and invariably his own

The panel discussion on "Equipment Sales and Merchandising Methods" as presented before the National Association of Refrigeration Contractors is recorded on this and the next two pages. These are followed by a resume of discussions from the floor.

personal appraisal is excessive, as compared to the actual value. Of course, the salesman is desirous of closing the sale and too many times he becomes an ally of the prospective purchaser and the pressure is placed upon the dealer.

Trade-ins, of course, have their seasons. When sales volume is high, and the dealer is not too concerned about making the sale—it is a matter of take it or leave it. Of course, the salesmen enjoying a good sales volume when business is good does not become too discouraged because of the loss of a sale.

### Pressure Is On

When conditions are slow, however, and the prospect, at least outwardly, is not too much concerned about making the purchase, conditions reverse themselves, and the pressure is on both the salesman and the dealer, and the higher the pressure the better the deal for the prospect, and the result is a bad deal for the salesman and the dealer.

Therefore, again it becomes the dealer's responsibility to be able to properly appraise trade-in equipment and determine first, whether it is worthy of reconditioning, or whether it is just a pile of junk and should be scrapped. If it is a matter of junk, then the allowance plus the handling results in a discount on the sale, and both the salesman and the dealer are penalized.

If the equipment is worthy of reconditioning, then the trade-in allowance plus all handling and reconditioning costs, and re-selling expense, must be given careful consideration because those combined costs determine the selling cost.

### Caution Necessary In Selling Trade-Ins

A dealer must also exercise caution in selling trade-in equipment. First, the purchaser of the trade-in equipment is always a potential buyer of additional new equipment—trade-in equipment must be sold and if the dealer goes overboard and makes a commitment whereby his obligations parallel those in making a new sale especially insofar as warranties are concerned, he may dissipate a percentage of estimated profits that will eventually result in overconservatism insofar as future trade-ins are concerned. Nevertheless, he must definitely accept trade-ins as part of the fixture business and through experience learn to safeguard himself against the pitfalls.

The foregoing is in general some of the things that should be done to do a good job of selling commercial refrigeration equipment, but in the final analysis selling is an art—at least it used to be, and now we are all faced with the "acid test" as to whether or not we have forgotten the finer techniques. The days of putting the order on a spindle and waiting for a time to come up are over. It is time to dust the cobwebs off the brief cases and sales tools and sales know-how used during pre-war days.

It's time to forget the easy sales and dangerous philosophy of "find 'em, fool 'em, and forget 'em"—remember, instead, and practice the salesman's creed of "seek them, sell them, and serve them."

Serving them after you sell them is the most important. It is much easier to retain a customer than it is to regain a customer. A satisfied user becomes a person added to your sales department—and without pay. He becomes an "ambassador of goodwill" and without goodwill you cannot survive. The thousands of dollars the manufacturers spend for advertising on a local and national level is rendered worthless by the words—"it is no good" that reach the ears of additional prospects.

Remember always, when refrigeration equipment is sold the buyer may be influenced by styling, ruggedness of construction, price, and many other things, but basically he is buying refrigeration. Unless he gets the right kind of refrigeration he is not content.

## EATON PERMANENT MOLD GRAY IRON CASTINGS

### for Connecting Rods



- ★ STRENGTH
- ★ FREE MACHINABILITY
- ★ GOOD BEARING SURFACES
- ★ UNIFORM STRUCTURE

The specific qualities you want in connecting rod castings are provided in Eaton Permanent Mold Gray Iron Castings. Good tensile strength, uniform structure throughout the casting, and the ability to take a fine finish on bearing surfaces are characteristics of all Eaton Permanent Mold Gray Iron Castings.

Free machinability makes for production economy. Proper annealing eliminates any chance of distortion after machining.

Millions of Eaton Permanent Mold Gray Iron Castings are used annually for such critical parts as refrigeration valve plates, pistons, crankshafts, cylinder blocks, cylinder heads, and pump bodies.

Eaton Foundry Division engineers will be glad to work with you in adapting Permanent Mold Gray Iron Castings to your own products. Send for your copy of the illustrated booklet, "The Eaton Permanent Mold Process."



THE EATON PERMANENT MOLD MACHINE IS A SYMBOL OF THE QUALITY OF GRAY IRON CASTINGS PRODUCED BY THE PERMANENT MOLD PROCESS.

# EATON

MANUFACTURING COMPANY  
FOUNDRY DIVISION

9771 French Road • Detroit 13, Michigan



## Selling Room Air Conditioners Is Separate Job, Wheeler Finds

"Selling Room Air Conditioners"

By H. E. Wheeler, Air Comfort Corp., Chicago

Someone might naturally be skeptical as to why anyone who is selling room air conditioners would be willing to tell his competitors how he does it. I have not the slightest fear in this regard, however, for two reasons—one is that the field is enormous and there is plenty of room in it and competition never hurt anybody; and the other is, that I know no one will take my advice. We have had this experience before and we cannot even get our own dealers to sell room air conditioners the way we sell them.

### Experience In Chicago

I will attempt only to state a few brief principles without very much supporting data.

Chicago is not commonly considered the ideal climate for this kind of business, but anything I have to say about selling room air conditioners, applies to this type of climate and I have had no experience in selling air conditioners in very warm or semi-tropical climates where the problems and procedures might be quite different.

Our experience is based on nearly 15 years of trial and error and we have recently been selling at the rate of nearly 1,500 units a year. The following are a few of the essential things we have found we cannot skip or omit if we are to be successful:

### Have Separate Department For Air Conditioning

1. There must be a separate department for this operation even if it only consists of one man. This department must have nothing else on its mind but the sale of room air conditioners, supplemented in the winter by other items which sell to the same customers. So far, we have never found anything to fill this second bill except window ventilators and humidifiers.

This is the provision that I have no fear of being adopted by others. Everyone will try to find some way to have their salesmen sell room conditioners to a man in his office one day and a 3-hp. store unit to a storekeeper in a store the next day, and they will end up the season with a total sale of room conditioners that you could put in your eye.

2. This department must be self-supporting the year-round. It is not possible to train salesmen and installation crews, use them, and let them go again. As a result of this necessity, salesmen must be taught to sell units the year-round. Our operation does a good business the year-round on room conditioners, and, as mentioned above, we supplement the line in the off-season with two other items.

### Salesmen on Commission

3. All of our salesmen are on a straight commission basis. The subject of how to hire them and how to train them is too big for this article, but one of the prime considerations is to take them on so few at a time that they can be given thorough training and put on a successful money earning basis before they are turned loose on their own. If you have a salesman who is not making money, get rid of him.

4. The customer must be sold on all the features of a room conditioner, except cooling, so thoroughly that he

tell you that he knows all about it. Send a salesman out and let him start from scratch as though the man had never heard of the equipment at all.

### Self-Buyers Also Need Sales Story

These people who buy under their own steam always turn into trouble jobs later on because they really are not well sold. They are buying for one rather inadequate reason, and when that reason evaporates, they will be completely unsold again. The salesman must follow his customers very closely. The customer needs to be told repeatedly what a smart move he has made in buying your unit.

Under the guise of telling him how to operate it, our salesmen go back after the installation is complete and again pour on him the story of what a wonderful machine he has. The best selling is done after the order is received. We find that most of our leads result from previous customers.

All salesmen must, of course, know how to estimate a room load and the form for doing that is extremely

simple. They must also be able to measure a window accurately and put the measurements down on a simple form. Never allow any unit to go in where the salesman has not made a complete inspection, even if it would work. It would be bad psychology because the customer would figure the unit was not particularly selected to meet his needs. The sight of a salesman out there taking measurements is reassuring to him, and it also saves you a lot of trouble later.

Naturally, we do not install these jobs on a basis where they will be inadequate. We sympathize with the customer who wants to buy just a little cooling, but we advise him to go elsewhere for it. We know that he will never be satisfied no matter what he tells you at the time. For that reason, it is almost impossible to sell a line of room conditioners unless it contains several sizes and can really be measured to fit the job.

On a wholesale basis, we will not permit any dealer to do his own installing and servicing unless he is well equipped to do it. If he is a small operator just selling a few

units a year, he is much better off to let us handle that end for him and pay us for it.

As a part of this section, therefore, it follows that if you are a small operator and never intend to be a big one, it is much better for you to tie on to the coat strings of some large distributor who is completely equipped to furnish you with all the services you cannot set up for yourself.

### Should Be Big Operator To Make Money

Lastly, I do not believe anybody ever makes money just selling a few of anything; there is always considerable hidden expense getting ready to do something new or different. My advice to dealers who have not yet gone into selling of room air conditioners, would be to make up their minds on this problem: Do I want to be a big operator in this field and make it the most important end of my business with a volume twice as great as any other department of my business?

If the answer is "no," you'd probably better stay out of it.

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## Three Popular Air Conditioning Sales Methods Outlined by Floreth at NARC Convention

"Air Conditioning Construction"

By J. J. Floreth, General Sales Manager, Westerlin & Campbell Co., Chicago

I have interpreted my subject to include that type of air conditioning equipment which requires additional services and construction to properly perform its intended duties. This would include such auxiliary constructions as air distributing systems using sheet metal ductwork and grilles; insulation, temperature control systems, auxiliary heating systems, and the more extensive type of electric power, water supply, and other facilities.

### Two Types of Equipment

In contrast, air conditioning units of the so-called package type, commonly referred to as room coolers, can generally be installed to serve a relatively small area without auxiliary constructions, except for minimum power, water, and waste services. These units are available from ½ to 3 hp., and are seldom provided with auxiliary air distributing systems. Although many manufacturers continue this self-contained design up to 15 or 20 tons refrigeration capacity, the greater air volumes to be handled together with the probability of serving separate enclosures necessitate the design of air distributing systems tailored to each installation.

Probably the dividing line between "package air conditioning" and "air construction" roughly falls at 3 to 5 tons.

My work during the past three years has given me an excellent opportunity to observe and study the sales methods used by various organizations in the air conditioning field that lies between 5 and 20 tons refrigeration duty. Sales methods vary widely between organizations, as well as the different approaches to the selling problem in metropolitan as contrasted with rural areas.

### Three Sales Approaches

An analysis of methods in general use today indicates that air conditioning sales in the 5 to 20-ton classification may be roughly grouped into three techniques, which I will attempt to briefly discuss in the order of their predominance.

I would call the first and most common sales method an "engineering approach," and it is the standard of most sales organizations who handle this class of work. In general, it consists of approaching each prospective sale and installation as a separate engineering and design problem, and involves more or less elaborate field surveys, load calculations, equipment selection, and balances plus the design and estimating of

all types of auxiliary construction needed to complete the distribution of conditioned air, control of temperature in separate zones, and so forth; all in advance of the actual sale and without commitment on the part of the buyer.

Many organizations approach even a small 3 or 5-ton job on this basis and have been forced to maintain a sizable technical staff consisting of engineers, estimators, or draftsmen to supplement their sales personnel. If the salesmen handle all of their own engineering and design, special training and experience are required and each man handles relatively few jobs per month.

Although the larger and more complex installations obviously necessitate this type of complete engineering approach, and it may be occasionally warranted by even small special jobs, I can assure you it is a costly method of selling air conditioning and has greatly limited the profits of this class of work.

### Some Use Engineering Fee

This is particularly apparent when a considerable volume of individually designed work is bid on a competitive basis and the percentage of sales secured must be charged with the total engineering burden, including the time and expenses incurred on those jobs which were lost to competition.

Some organizations have attempted to realistically face this burden by establishing an engineering fee in addition to normal overhead and profit charges, but are still faced with the prevailing market level of this work, which is, of course, influenced by competitive situations and many broader economic aspects entirely beyond their local control. If we assume that the average selling price is established by these broader market and economic aspects, then the engineering fee merely becomes a percentage of the overhead or profit and the net result is essentially the same.

In recent years, a number of companies entered the air conditioning construction field who brought with them a broad experience in the merchandising of heavier appliances, often not related to refrigeration. Some of these companies have attempted to adapt successful merchandising tactics to air conditioning construction sales, and their methods might be grouped into a second classification, which I will call the "merchandising approach." I would like to briefly discuss some of the sales methods used.

I have in mind a very successful firm whose business was originally built on the sale, installation, and service of such heavy appliances as household refrigerators, electric and gas ranges, automatic washing machines, and so forth. They first entered the air conditioning field by adding ½ and ¾-hp. room coolers to their appliance lines and continued to successfully merchandise these items.

### "Merchandising Method"

When these people entered the air conditioning construction field by adding larger self-contained units to their line, they attempted to follow one of the basic principles of merchandising; namely, quoting a standard installed price complete with one year's service.

Their price attempted to include all sheet metal air distributing systems, control systems, electric wiring, plumbing, and other auxiliary constructions on a unit basis, and considerable study was devoted to arriving at average costs on a floor area, cubic content, and tonnage basis. They wanted to place their salesmen in a position to quote on a complete 3 to 20-ton air conditioning installation after a few hours of survey and estimating, and always on his first contact with the prospective buyer.

Other organizations have attempted many variations of this merchandising approach, and I recall efforts to reduce the air-distributing problem to a price per foot, run of ductwork, electric wiring to a unit price per horsepower, and many other intelligent construction cost analyses that would result in a basic formula necessary to merchandising—namely, that of a completely installed price that could be determined with minimum time and expense.

Although some organizations continue to use variations of this formula, I have not yet seen it successfully applied to a large volume of air conditioning construction, and frankly doubt if it can be developed to a degree that will overcome its many drawbacks.

### Rising Costs Offer Problem

All of these straight merchandising approaches have been confronted with a rising cost level during the postwar period. For example, sheet metal costs have risen from 50 to 100% and vary widely between different localities and individual contractors. The same has been true of all basic constructions involving a predominance of labor, and it seems impractical to arrive at a sound construction equation that will conform with market price levels and still allow for the many variations and contingencies of air conditioning work.

These merchandising efforts have, of course, been meeting technical competition, and the average buyer still seems reluctant to consider a promptly quoted blanket price as sound as the bid where obvious time was devoted to surveys, calculations, layout drawings, etc. We all like to think our particular requirements are just a little different or special, and the average air conditioning buyer seems to prefer the tailor-made approach.

There are definite evidences of lost sales where the installed price quoted from a merchandising formula could not take into account the construction savings peculiar to certain projects, and resulted in the blanket price being out of line with carefully engineered competition. If you lose the majority of these jobs and wind up with a predominance of low-profit work where the formula price failed to provide for special construction problems that materially increase installation costs, it is obvious your over-all profit pattern will be unsatisfactory.

I would like to offer for your consideration and discussion a third approach, which, for want of a better name, I will merely call the "combination approach" because it is a combination of merchandising and engineering application principles. It is currently being tried by a few organizations with which I am personally acquainted, but I do not believe it is in common use today, or perhaps my observation does not cover a sufficient cross-section of our industry.

This sales method attempts to separate the self-contained air conditioning unit or equipment from auxiliary constructions, and handle the equipment sale as a merchandising problem, but continue to treat auxiliary air distributing systems

## Audience Reveals Interest In Markups And Handling of Engineering Expenses

Question—(Hal Wheeler)—"I've noticed a tremendous difference around the country as to the markup on construction type air conditioning installations. Why?"

Answer (Floreth)—"I've observed some fluctuation in markup. In metropolitan areas most contractors are shooting for a 50% markup. In some rural areas contractors would think they were underpricing a job with less than 70% markup. In rural areas, of course, the contractors are closer to their customers and have less competition."

Question—"We have a combined appliance dealership and air conditioning construction firm. What percentage of the cost of our air conditioning operations should be charged to overhead?"

Answer (Floreth)—"In the small construction field overhead on air conditioning will range from 25 to 30%, if you throw in all the true factors of cost. From knowledge of our distributors, we find that 50% gross markup does not leave over 10 to 15% net profit before taxes, based on the sales dollar."

Question—(Warren Farr)—"Do you find that customers are being asked to defray the engineering cost on air conditioning?"

Answer (Floreth)—"I have seen this done very seldom, and then it is almost universally a failure because of competition. It is common on sales of 500-ton jobs, say, to sell with 5% added to the sales cost for engineering."

"It is engineering that has cut the heart out of profit in air conditioning construction. We do not get nearly the profit on our type of work that

firms dealing in other types of heavy appliances do."

Question—"Don't you think it would be a good idea if customers calling in for bids should pay for the engineering that is done by the bidders?"

Answer (Floreth)—"Our organization today can't spend, say, two months figuring on a 250-ton office job without a commitment. If we were approached on such a job, we, and other contractors, would refer the prospect to a consulting engineer. For smaller dealers working on smaller jobs competition won't let this be done. We hope it could be done. Also, the return of normal business levels probably won't let us continue our extensive engineering."

Question—"What is the trend of markups on commercial refrigerator equipment?"

Answer (Krall)—"Markups on commercial refrigerators seemed to be headed downward. Some dealers who have been used to taking big markups are now having some difficulty, while the more stable operators who have been satisfied with more normal margins are getting along all right."

Question—"Trade-ins seem to be getting more of a problem in commercial refrigerator sales. What can be done to handle them, 'hiding' the trade-in allowance by inflating the price for the new equipment?"

Answer (Krall)—"Trade-ins will become more and more of a problem in selling commercial refrigerator equipment. I don't believe competition will permit 'hiding' the allowance by inflating the list price. Dealers will have to learn how to evaluate trade-in values better."

approach these organizations formerly used.

### Advantages of Combined Approach

Our firm employs five merchandising salesmen who sell the complete line of package products in addition to air conditioning construction, and they have been able to keep two office engineers loaded with work. It is frankly not successful on all sales, and this firm at times reverts to a complete engineering job before quotation, where the size or shape of the project combined with their chances to obtain the business warrants the engineering expense involved.

Where the merchandising sale of the self-contained unit is successful, it obviously has secured the buyer's signed commitment before investing engineering time and personnel required for detailed job measurements, further calculations and installation drawings. It further assures a standard profit on the major portion of the sale and a known percentage on the auxiliary constructions without the risk of the usual construction cost contingencies.

In my opinion, this is a new approach to air conditioning sales in the 5 to 20-ton field, in that it applies merchandising sales methods to the basic equipment sale and properly treats auxiliary constructions as an individual job engineering problem. It permits experienced merchandising salesmen to sell this type of work without a profound technical education and construction background.

### Here is . . . SUPERIOR CARBONATION



With the HUDSON Constant Pressure CARBONATOR Only **99.00** complete IMMEDIATE DELIVERY FROM STOCK

May be installed in any sweet water bath, bottle cooler, walk-in box, or in connection with Temprite or any other cooling system. When properly installed this unit produces a quality soda water which is unexcelled.

- NO MOTOR
- NO DAMP BASEMENTS
- ENTIRELY AUTOMATIC
- COMPACT—REQUIRES LITTLE SPACE
- NO PUMPS TO JACK
- CONSTANT EVEN PRESSURE
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gives you the **FEATURES**  
your customers want!

Sales are easier to make and volume builds up faster, when the product you sell has what it takes to make the customer want it. Besides being "just the right size" for every American home, the Revco Chill Chest is equipped with a Tecumseh sealed unit that makes it as trouble-free as any mechanism can be made and more economical in operation than any other home freezer now on the market. Every woman who sees a Revco Chill Chest will positively fall in love with it and moreover, in spite of being a quality product from every angle, it is priced right, so any American family can buy it.

Check the features . . . then write us.

- 1 Everything is readily accessible . . . no reaching or stretching.
- 2 Has the lowest operating cost of any Home Freezer now on the market.
- 3 Five year warranty with each Revco Chill Chest.
- 4 Maintenance is negligible. Dealers make more profit as service calls are at a minimum.
- 5 Truly beautiful in design and stays beautiful. Every woman who sees it wants it for her home.
- 6 Easy operating "floating action" lid, easy to look at . . . easy on the pocket book . . . easy to sell.
- 7 Exclusive safety lights tell when current is interrupted or temperature rises. Full protection against spoilage.



**Revco**  
**CHILL CHEST**

Revco INC. • DEERFIELD, MICHIGAN



## Estimated Refrigerator, Range Sales In '49 for Various Cities

## Gibson Tells Dealers How National Advertising Is Geared To Help Them In Their Communities

GREENVILLE, Mich. — How Gibson's national advertising is geared to serve retailers in their own communities is currently being explained to its dealers by Gibson Refrigerator Co. here.

Gregory V. Drumm, manager of advertising and sales promotion for the manufacturer, recently issued the first of a series of charts for dealers to show them the relationship between the circulation and readership of the national magazines in which Gibson advertises and the actual estimated refrigerator and range market in each city in the United States.

The first large chart covers 76 large cities of approximately 100,000 or more population scattered all over the country. It also includes a chart showing averages for cities by size ranging from 100,000 population down to 1,000 population.

Drumm explained the thinking behind this dealer aid as follows:

"To gear Gibson national magazine advertising to local demand, we started by recognizing that it takes more than one advertising message to make a distinct and lasting impression on the magazine reading prospect.

"No one knows for sure how many messages are required to make a prospect take a look at a particular brand. One reason for this is the varying effectiveness of different advertisements.

"After recognizing this and other limitations on the measurement of local public acceptance, we at Gibson set up a continuance substantial magazine campaign.

"This campaign means that such Gibson advertising during the year appears in magazines that have a local readership of anywhere from 15 to 75 readers for every 1949 potential refrigerator sale in the same communities.

City	Total Messages In Advertising Program		Probable Industry Sales In 1949	
	Circulation	Readership	Refrigerators	Electric Ranges
Atlanta	259,353	524,754	9,500	4,000
Boston	621,683	1,259,508	30,000	3,600
Chicago	2,231,590	4,443,876	180,800	32,000
Cleveland	612,496	1,258,680	36,000	6,000
Denver	337,652	681,714	13,000	1,400
Detroit	1,192,680	2,063,208	80,000	17,000
Houston	337,340	680,622	18,000	1,700
Los Angeles	1,626,823	3,320,340	96,000	14,000
New York City	2,420,141	4,759,728	328,560	19,800
Philadelphia	1,166,191	2,350,566	85,000	8,000
St. Louis	498,813	1,004,538	44,000	8,000

## AVERAGES FOR CITIES BY SIZES

Size of City	Circulation	Readership	Refrigerator	Electric Ranges
80,000 to 100,000	85,000	172,000	4,300	1,900
60,000 to 80,000	64,000	129,500	3,400	1,500
40,000 to 60,000	52,400	105,000	2,500	1,200
30,000 to 40,000	34,600	70,000	2,000	950
20,000 to 30,000	26,200	53,000	1,500	750
15,000 to 20,000	16,800	35,000	1,100	550
10,000 to 15,000	12,600	26,500	800	400
5,000 to 10,000	8,400	18,000	600	350
2,500 to 5,000	4,200	9,000	300	175
1,000 to 2,500	2,600	5,700	120	75

"We believe that it can be reasonably assumed that many local prospects will certainly know Gibson and consider Gibson after these advertisements appear month after month in the magazines most of them are reading.

"Gibson realizes, however, that this brand acceptance on a national scale serves as the groundwork for intensive local advertising by the dealer. To bring home this fact in a seeable way to Gibson dealers, Gibson has developed a new nationwide market study.

"This study relates circulation and readership of the magazines in which it advertises to the actual refrigerator and range market in each city in the United States.

"The next step in this Gibson advertising program will be to suggest the amount of local advertising—principally in newspapers—that it will take to obtain for a Gibson dealer his share of his local refrigerator, range, and home freezer market."

The chart sent to dealers is enclosed between full-color copies of the refrigerator and range advertisements that Gibson will insert in the *Saturday Evening Post*, *Ladies Home Journal*, *Good Housekeeping*, *Better Homes & Gardens*, and *Country Gentleman*.

Typical of the tabular information provided are the entries for these key cities shown in the chart above.

## Assure customer satisfaction—

# USE THE DELCO HERMETIC MOTOR

You build more customer-pleasing value into your refrigerators when you build them around the efficient power and quiet operation of Delco Hermetic Motors. That's why a majority of the leading refrigerator manufacturers are using these quiet, long-lived power units as original equipment today.

Delco Hermetic Motors for refrigerators are available in sizes from  $\frac{1}{16}$  horsepower and up—split phase, condenser start, condenser start and run. Parts are processed to remove all foreign matter that might cause trouble.

Special wire coatings protect motor windings against splash or vapor . . . assure dependable power under adverse conditions. Operation by hot wire starting and overload relay affords excellent protection to the phase windings as well as protection against overload.

The rugged construction of the rotors in the Delco Hermetic Motor insures long life. These are supplied in both the copper-



welded and die-cast types. To assure satisfactory operation, Delco Hermetic Motors are given dielectric and run-in tests before leaving the factory.

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DELCO PRODUCTS, DIVISION OF GENERAL MOTORS CORPORATION



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# The KEY to AIR CONDITIONING

by James J. LaSalvia

Readers who have any questions regarding the application of air conditioning are invited to write to Mr. LaSalvia, the author of this series, who will be pleased to furnish a complete and detailed answer free of charge. This is another of the services provided by the NEWS.

## Evaporative Condensers (Cont.)

### OPERATION

The evaporative condenser, Figs. 3 and 4, is a part of the refrigeration cycle. The hot gas refrigerant from the compressor proper to the condensing coil in the evaporative condenser.

The circulating pump takes the

water from the pan and discharges it through a series of spray nozzles over the condensing coils, thereby condensing the hot gas to a liquid. This liquid is collected in a receiver located in the water pan. From the receiver the liquid is fed through the expansion valve to the cooling coils.

Table 1—Data for Evaporative Condenser

Capacity In Tons of Refrigeration	5	10	15	20	25	30	40	50
Air Capacity Fan (c.f.m.)	1,600	2,500	3,750	5,000	6,250	7,500	10,000	12,500
Free Delivery	1/2	1	1 1/2	2	3	3	5	5
Fan Motor (Hp.)	1/2	1	1 1/2	2	3	3	5	5
Water Supply Connection	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Pump Discharge	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Capacity (g.p.m.)	6	10	15	20	25	30	40	50
Pump Motor (Hp.)	1/4	1/4	3/8	3/8	1/2	1/2	3/4	3/4
Water Loss by Evaporation (g.p.h.)	14	25	35	45	55	65	85	105

The above data is closely aligned with what the industry uses. For definite information on any particular make, consult the manufacturer of that make.

In the cooling coils the liquid refrigerant is changed back to a gas of high density.

This gas is carried back by the suction line to the compressor, thus completing the cycle.

The fans pull the air through the condensing coils and water sprays: in doing so, a certain amount of the water that is sprayed is absorbed in the air stream. The water absorbed is the water that is evaporated by coming in contact with the hot condensing coil, which contains the hot gas. The heat of the hot gas is passed on to the passing air.

The air passing through the condensing coils and water sprays, picks up the moisture, making the air very moist and saturated. The air then passes through the eliminators to get rid of any entrained water, and is discharged by the fans to the outside.

Precaution must be taken, so that this saturated air is not recirculated.

The effectiveness of the evaporative condenser depends upon the wet-bulb temperature of the air which enters the evaporative condenser.

As the air flows through the water sprays, a certain amount of the water is evaporated; thereby the water dropping into the water pan is water that has been cooled. The water is usually cooled to about 5° F. above the entering wet-bulb temperature of the air entering the evaporative condenser.

### SELECTION

The evaporative condenser has to be selected together with the compressor. It must be capable of condensing the same amount of B.t.u. as the compressor generates and shall operate at the same suction temperature or pressure, at the wet-bulb temperature of the air which

### System with Evaporative Condenser on Roof

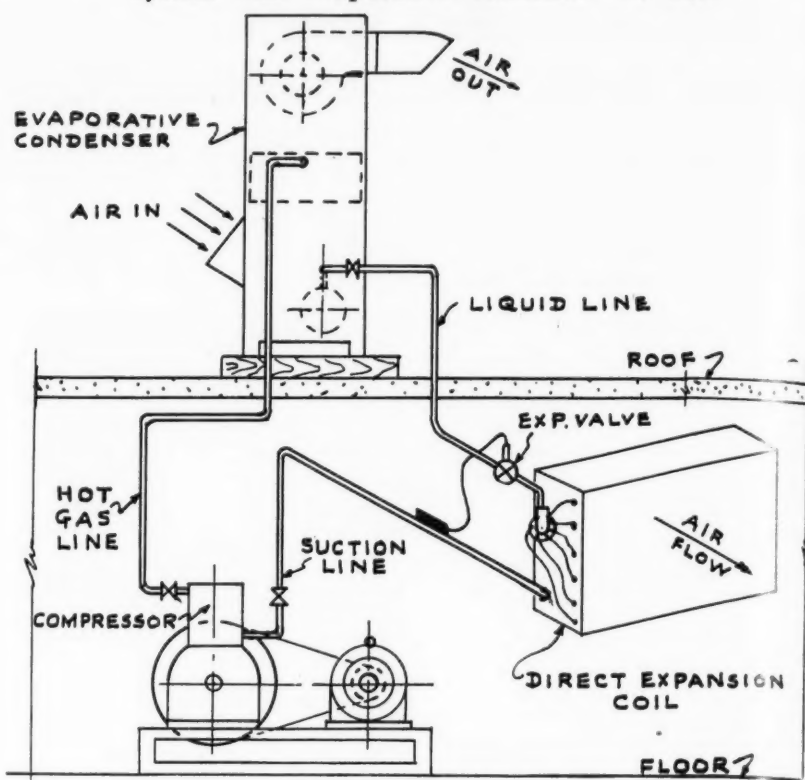


Fig. 3—This indicates a typical hookup when the evaporative condenser is located on the roof.

must enter the evaporative condenser.

### EXAMPLE

Assume that an evaporative condenser is to be used in conjunction with a compressor and direct expansion coils and that the evaporative condenser is to be installed on the roof.

Let us apply the above to the department store system, previously discussed.

From the heat gain given, the outside wet bulb is 75° F.

Therefore, according to the selection of the direct expansion coils, we have the following:

1. Cooling coil temperature is 45° F.
2. Compressor has a capacity of

272,384 B.t.u. operating at 42° F. suction temperature.

3. The evaporative condenser must have a capacity of 272,384 B.t.u. when operating at a 75° F. wet-bulb temperature, and cooling coil operating at 45° F.

The evaporative condensers manufactured by the industry are closely aligned as to design and other data.

Table 1 shows such data which can be used, to meet any condition. You will note that the amount of air used is in a ratio of 250 c.f.m. per ton of refrigeration. The water sprayed by the pump is one gallon per ton per minute. The amount of water lost by evaporation is about two gallons per ton per hour.

(To Be Continued)

### Evaporative Condenser on Same Floor with Unit

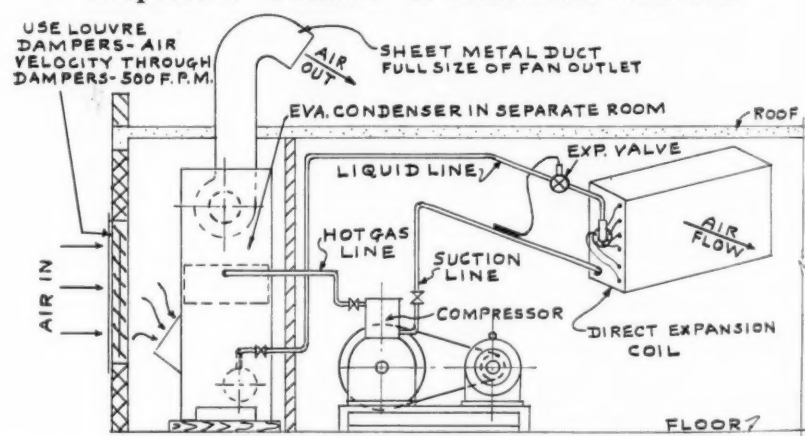


Fig. 4—Here the evaporative condenser is located on the same floor with the condensing unit, but it is enclosed in a separate room and discharges above the roof.

## How can you possibly beat Bundyweld\* for refrigeration tubing?

Consider Bundyweld from every angle . . . compare Bundyweld with any other tubing—then ask yourself, "Can I possibly beat Bundyweld for my tubing needs?"

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HIGH FATIGUE  
STRENGTH

THINNER WALLS,  
YET EQUAL STRENGTH  
... FASTER COOLING

EASY AND FAST  
TO FABRICATE

ALWAYS HELD TO  
CLOSE DIMENSIONS

COST IS LOW

These are only a few of the reasons makers of better refrigeration equipment choose Bundyweld Steel Tubing for condenser and evaporator coils, compressor lines and connecting tubes.

By any analysis, Bundyweld has proved its superiority. Whatever your tubing needs, investigate Bundyweld Tubing now. Available in steel, Monel or nickel . . . all double-walled from a single strip.

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YOUR EXPECTATIONS

### WHY BUNDYWELD IS BETTER TUBING

1 Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with bonding metal.

2 This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.

3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong, ductile tube, free from scale, held to close dimensions.

4 Bundyweld comes in standard sizes, up to 3" O.D., in steel (copper or tin coated), Monel or nickel. Special sizes can be furnished to meet your requirements.

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MANAGEMENT INTERNATIONAL EXPOSITION COMPANY



## Personal O.K. on Refrigerator Repair Means Satisfied Customer, Repeat Calls for Dealer

ROCHESTER, N. Y.—Having a refrigeration service customer sign a statement form that she is well satisfied with the work and the way it was handled is a bit of psychology used by the E. W. Edwards Co., appliance dealers here.

"A lot of housewives order appliances repaired, and forget all about who did the work a few days later," Eugene Murphy, appliance manager, indicated.

"We feel, on the other hand, if each detail of the job is brought to her attention, and she signs that we did the work to complete satisfaction, she will remember us when the time comes for additional service or to buy a new appliance."

The Edwards firm has a long list of service operations, which makes it possible for a refrigeration mechanic to use check marks to show exactly what has been done. At the bottom, a statement is printed showing that the housewife is well pleased with the neatness and efficiency of the repair operation.

Nobody refuses to sign this, because Edwards servicemen go to great lengths to "clean up" after every refrigerator repair, to wipe the box clean and to replace unsightly hardware.

Use of the signature form has had three outstanding results, according to Murphy. First, the firm gets the call whenever there is more appliance repair work to be done. Second, by signing, the housewife impresses herself with the reliability of the Edwards firm, and is far more likely to buy new appliances there because she remembers the name and information passed along to her by the service mechanic.

"Lastly, the signed form protects us against expensive callbacks," Murphy said, "which were something of a problem in the past. The signed form shows exactly when the repair service was rendered and that it was perfectly satisfactory, in the event something goes wrong with the box again. Before this system was developed, the customer could claim that work was done only a few weeks before when actually months were involved," Murphy further indicated.

Still another signature form is used by Edwards on delivery of new appliances, certifying that nothing was missing on the refrigerator, that it ran well, that there were no

scratches or mars on the refrigerator surface.

This puts a quick stop to any complaints which might otherwise materialize. All signed forms are filed alphabetically and kept permanently on hand.

To provide incentive for servicemen to do excellent work and please the customer with operating neatness, the Edwards appliance management has set up an unusual salary raise plan.

Under this, each serviceman receives a standard salary, subject to a raise every six months. If all the work has been turned out profitably, and customers sign every repair form as satisfied, all salaries are raised at the end of six months.

The firm makes an exhaustive review of service operations twice a year, and to date, has found good operations quite worth a raise to each man.

## Market Installs \$25,000 Refrigeration System

FALCONER, N. Y.—A \$25,000 refrigeration system has been recently installed in the Gold Star Supermarket here, according to Samuel R. Raimondo, proprietor.

The system provides 100 sq. ft. of refrigerated space for frozen foods, 200 sq. ft. for fruits, and 250 sq. ft. for meat storage, Raimondo further stated.

## Worthington Net Income For 9 Months Down 19%

HARRISON, N. J.—A net income of \$3,881,418 for the nine months ending Sept. 30 as compared to \$4,742,426 for the same period last year was reported recently by the Worthington Pump & Machinery Corp. This represented \$3.68 earned per share after preferred dividend requirements this year as compared with \$4.61 last year, the report indicated.

## Schueler's Splits Repair And Service Departments

FORT WAYNE, Ind.—Schueler's Appliance Stores here has announced the enlargement of parts and service facilities and personnel for handling major appliance repair work in the Fort Wayne area.

The repair and parts department will be managed by G. R. (Jerry) Dolin, who formerly was in charge of both parts and service.

Richard Moreo was appointed manager of the service department, which was separated from the parts department and developed into a full-scale department in its own right to provide 24-hour service to customers. The two departments are expected to work closely together to expedite repair work.

Both men will headquarter at the 2126 Fairfield Ave. store, where the main service department will be maintained. A service department also will be maintained at the downtown store, which is located at 126 East Wayne St.



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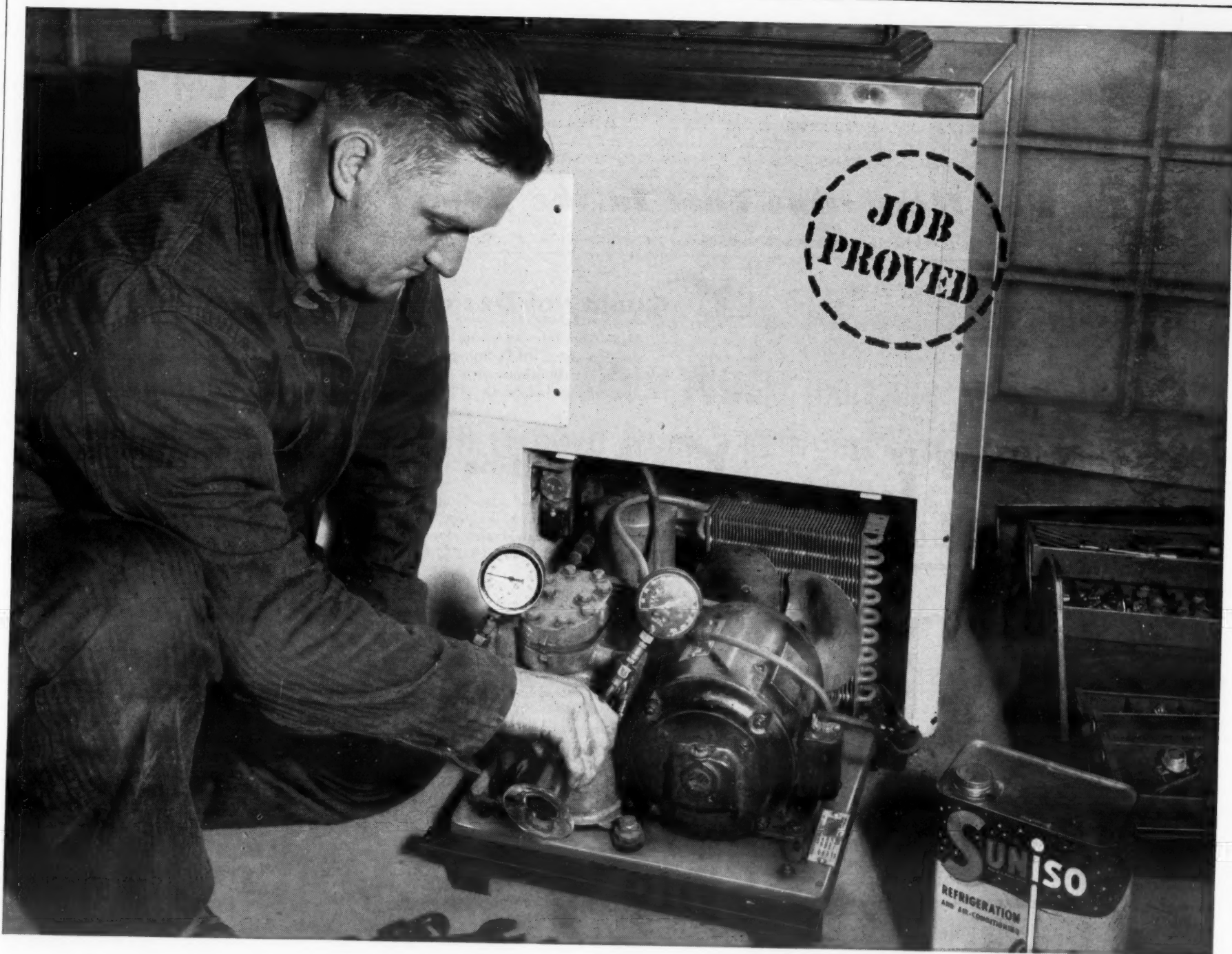
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## KEEPS 170 COMPRESSORS TROUBLEFREE

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In six years' service there has been no trouble. Systems have been free of wax and sludge. Not one of the units has required major repairs, and main-

tenance has been limited to routine inspection. The ice cream manufacturer is ahead by a sizable sum because of economical performance year after year. Besides this, he has the continuing good will of retailers and their customers—a result of dependable service.

Performance of this kind explains the wide preference for Suniso Oils in refrigeration and air-conditioning. Suniso Oils are the predominant choice of equipment manufacturers in this

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Suniso Oils come in several grades, each with extremely low pour-point and low wax-separation point. All have exceptional dielectric strength and high resistance to chemical change when mixed with Freon or any other modern refrigerant. For your copy of the illustrated bulletin "Lubrication of Refrigeration and Air-Conditioning Equipment," write Dept. RN-12.

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DISTRIBUTORS FOR KINETIC'S "FREON-11," "FREON-12," "FREON-21," "FREON-22," "FREON-113" AND "FREON-114"

## Equipment Sales Moves, Incorporates on Jan. 1

PHILADELPHIA—Equipment Sales Co., which handles frozen food cabinets, soda fountains, and restaurant and kitchen equipment, will be incorporated as of Jan. 1, 1949, and at the same time will move to 525 Arch St. here, Samuel Jasner, Jr., secretary-treasurer of the new corporation, has announced.

The organization was founded in 1932 by Jasner and Harry Brickman. The latter will be president of the corporation. William J. Merz will be vice president.

The company, which is also a distributor for the Weber Showcase & Fixture Co., is now located at 3915 Market St.



## They'll Do It Every Time . . . . By Jimmy Hatlo



## Do You Have 'One Foot In the Door'?



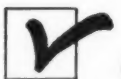
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## Let's Be Polite When We Answer the Telephone

WITHIN the next few months appliance dealers will have to go out after sales, instead of allocating deliveries to impatient clients.

In the meantime, there'll be a transition period. This period is beginning right now. It's a period during which your longevity as a dealer—Mr. Subscriber to the NEWS—will be at stake. Why? Because to stay in business you'll have to make friends and keep them.

Unfair as it may seem, your hold on a valued appliance franchise may depend partly upon the manner in which your employees handle telephone inquiries. Customers and prospects are "touchy" these days, and are quick to register and report fancied slights and insults. An organization's courtesy—as evidenced in its telephone manners—is of prime importance in establishing its local rating.

Every employe who answers the telephone has an opportunity—and an obligation—to make friends for his employer. In the following paragraphs we propose to pass on a few rules for the proper handling of all telephone inquiries. These rules are easy to understand—and easy to follow. Hammer them into the eardrums of all concerned! Here they are:

(1) *Pick up the receiver after the first ring.* Nothing is more irritating to a client than having to wait impatiently for the callee to answer a phone call.

(2) *Don't transfer a call to someone else if you can take care of it yourself.* The client or prospect won't want to go over the same ground twice—once to the person who first answered and again to someone to whom the call is transferred. That's a nuisance.

(3) *After picking up the receiver, identify yourself, and name the firm you represent.* For example: Say "This is the Everbright Dealer—Joe Blow speaking."

(4) *Speak distinctly.* Don't mumble—don't whisper—don't shout. Thrust your tongue directly into the transmitter. Don't try to talk with a cigar, pipe, or pencil in your mouth.

(5) *Keep a pad and pencil close at hand.* Any time the caller must hold the line while you look around for a secretary to take notes, he's annoyed. If you must leave the telephone to consult records or confer with another employe, don't keep the customer waiting. Take his telephone number, and hang up—promising to call him back as soon as you have ascertained the facts.

(6) *When you have finished talking, say "Good-bye" pleasantly, and replace the receiver gently.* Never end the conversation by slamming the receiver down—which thoughtless act slugs the customer with a "crack in the ear"—lest you lose a past or potential friend.

(7) *When you're away from your desk or office, be sure that you have delegated to a responsible assistant, who will know when you will be back or where you can be reached, the job of answering your phone calls.* Otherwise, valuable time—customers' time—will be wasted.

(8) *Always be courteous and polite.* Don't interrupt, argue, or be impatient. Listen attentively. Soothe ruffled feelings diplomatically. Remember, when you're talking to a customer over the telephone, his impression of your firm is what YOU make it.



### Special-Design Equipment For Backbar Attracts Brewing Co. Visitors

MILWAUKEE—Specially designed Perlick Brass Co. backbar equipment has contributed no small part in making the newly built, but already famous, guest bar at the Blatz Brewing Co. plant here a mecca to Blatz visitors.

Extending 92 ft. long, the U-shaped bar is equipped with five 2-hal. Perlick Black Beauty direct flame dispensers. An island of stainless steel cooling cabinets with tiered display shelves runs down the middle of the U.

Workboards have been raised to eliminate stooping on the part of the bartender. Cooling cabinets have been located beneath these workboards.

Condensing units have been placed in the basement to avoid vibration.

All the bar equipment has been made of stainless steel to complement the black walnut bar. Reigning over the bar is a towering bas-relief of Ceres, goddess of grain and harvest.

The bar lounge is panelled in natural Wisconsin black walnut and decorated with floral prints. Golden hued mirrors reflect softly colored recessed lighting. Carpeting is of deep sculptured lime and lounge chairs are done in lipstick red.

### Expansion Plans Prompt Swift Mfg. Co. Move

DETROIT—Swift Mfg. Co., Inc., one of Detroit's oldline specialty firms supplying a score of major industries, moved recently from 247 McDougall Ave. to a modern production layout on a 9½-acre site fronting at 1455 East Nine Mile Rd., Hazel Park, Mich.

Mrs. C. B. Swift, widow of the founder and president of the company, said the move was necessitated by a new program of diversification and expansion laid out early this year when K. M. Schaefer, with an extensive background in the automotive and refrigeration industries, was brought into the organization as general manager.

All equipment and personnel are to be transferred from the McDougall address to a one-story, structural steel frame, daylight plant in Hazel Park. Principal products manufactured by Swift are fan blades and industrial fractional-horsepower and variable-speed sheaves and pulleys for original equipment manufacturers and jobbers' trades.

### Charter Is Granted to Edwards Refrigeration by Virginia

RICHMOND, Va.—Edwards Refrigeration, Inc., of this city, has received a charter from the State Corporation Commission to deal in refrigeration machinery. Officers are: H. Banks Edwards, president; Walter R. Smith, secretary-treasurer.

### Carter Is Typhoon Regional Sales Mgr.

BROOKLYN—P. E. "Nick" Carter has been appointed regional sales manager at Kansas City for the Typhoon Air Conditioning Co., Inc. here.



P. E. Carter

Associated with the distribution of air conditioning products for the past 14 years, Carter was formerly district representative for General Electric in the Kansas City central district, and prior to that was district sales manager representing the Timken Silent Automatic Co. in the north-west district.

In his present capacity with Typhoon, he will cover Kansas, Missouri, Illinois, Wisconsin, Iowa, Nebraska, South Dakota, and Minnesota.

### Raney Appointed to Research Group's Executive Committee

COLUMBUS, Ohio—E. C. Raney, president of Ranco Inc., was elected to the executive committee of the Ohio State University Research Foundation when the Foundation's board of directors held its annual meeting at Ohio State university recently. Raney has served on the Foundation since March, 1948, when he was appointed as an alumni member.

### Tie-In Vacuum Cleaner Offer Nets 40,000 Sales In 6 Weeks

MANSFIELD, Ohio—Offering to take the customer's old vacuum cleaner and to give him a hand vacuum listed at \$24.95 with every purchase of an upright cleaner at \$69.95 (the regular price) produced 40,000 sales for Westinghouse dealers during the six weeks period between Oct. 1 and Nov. 15, according to Robert E. Dobson, merchandising manager of the vacuum cleaner department, Westinghouse Electric Corp.

Total retail value of sales made during the promotion amounted to \$1,500,000, he said.

### Book Gives Latest Data on Use of Rivnuts In Installations

AKRON, Ohio—A new and revised edition of the Rivnut data book has just been published by the B. F. Goodrich Co., here.

The Rivnut is a blind fastener which can be used either as a rivet or nut plate.

The new book announces new power and manual tools for use with the rivnuts, tells step-by-step installation, lists types, sizes and grip ranges, and includes test data.

### Better Texture of Bulk Ice Cream Sold By Weight Wins Druggist Added Customers

AURORA, Colo.—By switching from ordinary quart-and-pint ice cream selling to the "by weight" system, Druggist B. T. Howard of the Howard Drugstore here has not only brought profit returns back to normal, but has actually increased his sales volume.

The Howard Drugstore, located in a growing community of 10,000, has found the problem of greatly advanced wholesale ice cream prices a difficult nut to crack. Ice cream once 80 cents a gallon has gone to \$1.25 per gallon, and resultant high retail prices have irritated many customers who are not backward about voicing their dislike of the situation.

"We experimented with manufacture-cartoned ice cream, sold through a self-service refrigerator, and found this unsatisfactory," Howard said. "Inasmuch as there seems to be a definite resistance here to pre-packaged ice cream which is difficult to overcome. The only solution, it seemed at first, was to reduce our profit on each ice cream sale, in order to please the customer."

Howard tried this for awhile, too, but was dissatisfied with the results. Then he hit upon the idea of selling ice cream by weight and has found that this completely solves most problems.

A small scale, graduated down to quarter-ounces, has been installed at the right end of the 11-stool fountain-luncheonette rail, with the weight dial readable from either side. Eight ice cream compartments are located in the fountain backbar from

which all ice cream is scooped and measured out.

A sign above advises the customer "Our Ice Cream is Sold by Weight—Twenty-Eight Ounces to the Quart, Fourteen Ounces to the Pint."

Ice cream is now scooped out into a paper carton, and weighed during the filling process, until the proper weight is reached. There is no "packing down" of the ice cream until the weight is so heavy that profit potentialities are lost, nor is the ice cream "crumpled" to fit.

"Customers seem to prefer the texture of the ice cream just as it is scooped from the container," Howard said, "and by the weight system, we are able to sell in various amounts between a pint or a quart, or larger amounts, with complete customer satisfaction."

Ice cream sales have risen constantly since the "by weight" system was introduced, and most customers appear in favor of it, according to the Aurora druggist.

### Nelson & Small Will Handle Gibson Line In Portland, Me.

GREENVILLE, Mich.—Nelson and Small, Inc., of Portland, Me., have been appointed Gibson distributor for the Portland area according to J. L. Johnson, general sales manager for Gibson Refrigerator Co. here.

Frank Dewey of Boston, Mass., is the divisional sales manager who will serve Nelson and Small.

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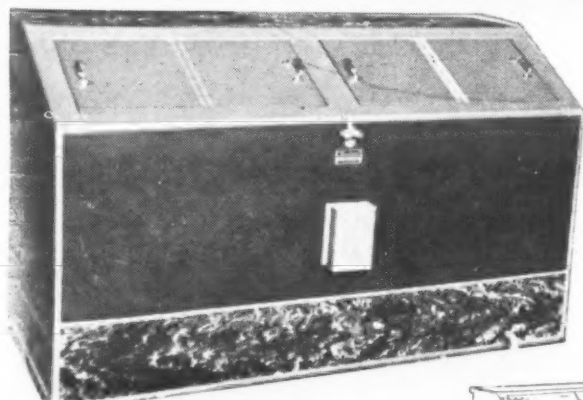
The use of oversize driers does not solve the moisture problem on most jobs. The only real solution is to use a drier that dries down to a low end point... a point so low that any remaining moisture is absolutely harmless!

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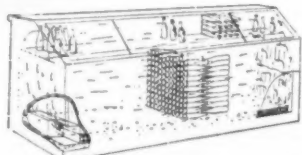


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## Why Is Parts Inventory Control Important? Here's Answer & Tips on Installing System

By E. Stuart Files, R. Cooper, Jr., Inc., Chicago

What do we mean by Parts Inventory Control? The term "inventory control" is rather loosely used to cover two functions which are really quite different. These two functions which might be called "accounting control" and "operating control" are related to each other only in that they both require the maintenance of adequate records of inventories, receipts, and issues.

The purpose of each can be defined as follows:

"Accounting Control" of inventories is concerned with the safeguarding of the company's property, and the proper recording of the receipt and consumption of materials and the flow eventually to customers.

"Operating Control" of inventories is concerned with maintaining inventories to the optimum level considering the operating requirements and the financial resources of the business.

You may very well say, "Why do I need Parts Inventory Control?" In general, my answer would be that the rapid changes in models, designs, competitive offerings, changing consumer acceptance, indicates a need for control of inventory—the transition from a seller's to a buyer's market which requires sales decisions to be made on your part presents a need for a factual basis for these decisions. I think that a part of the answer is in a good Inventory Control system. Now, I am talking about a system of control, not a set of records of one form or another which is merely a historical record of transactions that took place.

A control must be provided which is sensitive to the changes in demand for each item in order to stop surplus accumulation, obsolescence loss, out of stock conditions, which are a source of considerable expense, whether you realize it or not.

The turnover of stock effects the entire operation of a business because profits come from goods that move, and not those that lie in the stock bins. Your skill in controlling inventory is one of the really important things which will make your

business a thriving one.

Without effective inventory control a prosperous organization can quickly become unprofitable as a result of losses suffered on excessive or unbalanced stocks. Slow moving inventories not only tie up your working capital, capital which might be profitably employed elsewhere, but ever mounting carrying costs eat into profits.

The interest on money invested in stock, the shipping and handling costs, the cost of insurance, rent of the storage space used, the wages of the people required to handle excess stock, losses due to obsolescence, and mark-downs; these carrying costs amount to approximately 1% per month of the value of the stock on hand. Some concerns, I understand have found annual carrying costs running even higher than this—sometimes as high as 18 or 20% a year of the inventory value.

Make your dollars work by maintaining closer control of inventory and improving turnover. Think for a moment of the amount of money that you now have invested in parts. Supposing through better control of stock levels you are able to reduce the capital you have invested in parts by 50% or even 30%. What have you done? You have made available for other profitable use in your business a sum of money that conceivably you might have had to go out and borrow. You may have reduced the carrying cost of your inventory and you have done it merely by effective inventory control which will result in improving your inventory turnover ratio.

Serious business losses occur from over-stock and slow turnover. A temptation to over-buy for the purpose of securing discounts leads directly to slow turnover and high cost of possession.

On the other hand, let me caution you about the danger of too fast a turnover on fast moving, popular items. This results from carrying skimpy stocks and ordering so often and in such small quantities that the cost of obtaining these items goes

## Light Moment During Serious Discussion



Answer by E. Stuart Files (center) of R. Cooper, Jr., Inc., Chicago, to a question from the floor at panel discussion on "Service and Management Methods" during NARC convention amuses co-discussant Warren W. Farr (left) of Refrigeration Maintenance Corp., Cleveland, and Moderator S. Ray Thompson of Thompson-Hense Corp., Chicago.

up. Light stocks lead frequently to an out of stock condition which hampers your work and may sometimes result in a loss of customer goodwill.

I do not propose to tell you what the ideal turnover rate should be for your business, but I can point out that in some businesses such as coal and grocery concerns, they make their greatest profits on turnover from ten to twenty times annually. For the majority of concerns a profitable turnover is somewhere between four and eight times per year.

Now, I have discussed previous to this point a number of very general considerations that lend strength to the argument for inventory control of some type. The objectives in an Operating Control of Inventories were very briefly summarized in the definition which I gave you earlier. When this statement is amplified somewhat the specific objectives which must be kept in mind are:

(1) Service to the customers involving sufficient stocks to be maintained to meet the reasonable expectations of customers for prompt service.

(2) The effective use of the capital available to the business for financing the cycle of purchase, sale, and collection.

(3) The reduction to minimum of the risk of loss through obsolescence or surplus accumulation or shrinkage in market value between the time of

purchase and the time of sale.

What decisions are necessary to the development of an intelligent inventory control? Please bear in mind that the basic policy decisions which I am about to state are guiding principles, and not iron-clad rules or detailed procedures.

(1) What would be the company's policy as to service to customers? (12 hours, 24 hours, or longer.)

(2) Must the availability of capital be taken into consideration, and if so, what are the approximate limitations on the funds that can be used for inventory investment?

(3) Is the purchasing policy to be strictly non-speculative or is forward buying for price advantage to be permitted?

(4) What weight is to be given to the possibility of cost savings by purchasing larger lots than are strictly necessary to meet normal requirements?

(5) What is the availability of the parts?

With respect to the various methods of stock control that are available to one, we might point out that these run the gamut from the most simple to the most detailed systems. Visual inspection of stock might be a basis for determining your requirements. I might say at this point that visual inspection of stock seems to me to be a more or less hit and miss way of operation.

You might install a simplified form of bin record to keep track of your inventory, and then, one might install an elaborate system involving stock record cards that will show minimum and maximum stock levels, source of supply, records of all receipts and issues, balance on hand, record of back orders, and record of purchases.

The form that a Parts Inventory Control system may take will differ depending upon the size of the organization and other considerations which are known best only to yourselves. Assuming some of you might have 5,000 different items in stock, as is reasonable to suppose that you might, particularly in the medium and large sized service organizations, I would estimate that the cost of initially setting up stock records on that number of items would run about \$500 to \$600. This estimate covers only the actual cost of stock cards plus the personnel costs incident of typing the catalog number and description on the cards.

The cost of continuing the operation of this set of records will vary considerably depending on the volume of activity which is to be channeled through the stock records. In some cases it might be only a part-time job to maintain these records, and in others a full time clerical task for one or more persons.

## Panel Questioned on Non-Productive Time, Reduction of Crew In the Slack Season

Question—"How do you arrive at the figures for non-productive time?" (the questioner referred to this item in Sample Report No. 2.)

Answer (Farr)—"This is a more difficult problem in domestic and small commercial work than in air conditioning jobs. Non-productive labor is more likely in the former because costs are more vital to customers. We are educating our personnel to check their time closely."

Question—"How much of a reduction is there in your crew in the wintertime?"

Answer—"We are rapidly getting

(One contractor, at the conclusion of File's talk, suggested that firms "should be prepared to spend two or three times the \$500 mentioned by Files for setting up a simple inventory control system." Files replied, "It depends on how efficient you are; \$500 to \$600 ought to be enough for the average contractor.")

The job of developing inventory control in any particular business can be broken down into two very simple steps:

(1) Working out the procedures which will give the required result with a minimum of paper work.

(2) The selection and education of the personnel who would operate the controls so that they use these mechanisms intelligently and exercise judgment where judgment is required.

The second step I would like to emphasize as being of major importance, as no procedure, however carefully designed will function automatically under practical operating conditions. Your system and your control is only going to be as good as the person you have running it.

If you at this point have decided to install a parts Inventory Control system which employs the use of stock records of some form, I can outline for you very briefly the steps which I think you should take.

(1) Take a complete physical inventory involving the proper identification of all parts and a complete and accurate count.

(2) Establish your stock record cards.

(3) Have prepared a means of reporting to the personnel responsible for the maintenance of the perpetual inventory record a record of all receipts and of all issues.

(4) Establish minimum and maximum stock levels based on, let us say, three months' experience. These stock levels should be set by some responsible person and should be reviewed periodically. I suggest perhaps every six months.

(5) Arrange for cycle inventories to maintain the accuracy of your records.

(6) Select the merchandise which you will stock. The selection of items that are to be stocked is an executive responsibility and should not be delegated to a clerk.

A good physical control of stock makes possible or strengthens the accounting control of inventories. You will remember that in our definition of Accounting Control one of the things that we mentioned was the safeguarding of the company's property, which brings me to mention other factors which we will encounter in operating a service business which would tie in with a sound inventory control. Some of the problems associated with a good parts inventory control are:

(1) In connection with the purchase of parts not stocked but obtained as required for the job from a local supplier by your serviceman, some means of control must be exercised over this type of purchase.

(2) Simple control of some type should be exercised over servicemen's car stocks which sometimes represent a sizable investment.

(3) In larger organizations there is an opportunity for mis-use of parts by servicemen. It would seem logical that some means should be devised of checking the use of service parts to verify that they are used as intended.

Whatever you do in the way of developing an inventory control procedure, to be effective it must be simple, it must be easy to administer, and uniform in operation, and above all, save you money.

## Simple, Adequate Records Secret of Labor Cost Control--

(Concluded from preceding page)

mediately suggest that better routing would be in order.

It is possible to observe that some men are making more than their share of calls, while others are making far less than they should be. All of these statistics are available at a glance from the report laid out in this manner.

It is often desirable to prepare graphs using certain items from the report, and have them available where they can be observed by the service mechanics themselves. Productive hours, particularly, fit into the category of a subject that can be well illustrated by the use of a graph.

It is interesting to note that, of the service operations studied, the average productive hours of the department was approximately 60% of the total hours paid for by the service operator. This means that 40 out of every 100 hours must be absorbed in the overhead of a service operation. Continuous effort must be expended to reduce non-productive hours and increase productive hours.

Sample No. 3, is a forceful method to point out to the service operator labor costs, and without its use the

operator is often guessing at his actual labor costs. This particular sample portrays wage rates for three classifications of refrigeration mechanics.

The particular operation used in this sample sells its service labor at a rate of \$4.00 per hour to the consumer. The hourly rate of Class A commercial journeyman is \$1.87½ per hour.

When you add to that labor rate the various taxes and insurance and workmen's compensation, plus 25 cents per hour transportation charge, which was arrived at by taking the total automobile expense from the operator's books and dividing it by the total number of hours shown on the report marked Sample 2, an average of 25 cents per hour was indicated as transportation expense, and taking the 60% billing factor, or adding the 40% which was not paid for by the consumer to the labor rate, \$2.94 is indicated as the cost of labor and taxes before overhead.

The overtime hours, of course, carry a higher rate, and when the same taxes and factors are applied, \$4.92 is indicated as the cost.

In this particular operation, men were worked for a 48 hour period.

By taking 40 times the \$3.38 rate, and 8 times the \$4.92 rate, and dividing the total by 48, \$3.64 is the service operator's net cost for Journeyman A labor. This is a rather high cost, and a \$4.00 selling price is certainly a nominal figure with this cost.

It is interesting to note that a lower cost is indicated under construction work of \$3.12 per hour, even though the base wage rate is considerably higher than that of a Class A journeyman. This fact is established because it is the practice in construction work to have a man report on the job at 8:00 in the morning and to bill the customer for the total hours of labor. There is no reporting to the shop for materials or for calls, and the 60% billing factor does not apply in this instance.

With a \$2.37½ rate a \$3.12 cost is indicated. Also, overtime work is not performed on construction work unless it is billed as a separate item. The overtime cost as indicated by this breakdown is \$5.95 per hour.

It is essential that each service operator break down his labor cost as indicated on this sheet so that he can know his definite cost before fixing the selling price of his labor.

The three forms that have been illustrated to you are simple forms. They will serve you well. There are other forms which can give you substantially the same information. In order to have any form of labor cost control, it is necessary to know the information that is provided in these reports.

These reports can be prepared inexpensively and quickly by people within the service department. They can be compiled from the normal records that every service department must keep. They do not require any special bookkeeping.

The secret of labor cost control lies in adequate records, simply prepared, so that the service operator can tell at a glance his labor costs, his income from the sale of labor, and other vital information and statistics necessary for the successful operation of a service department.

### Sample 3

	Journeyman A		Journeyman B		Construction Work	
	Regular	Over-time	Regular	Over-time	Regular	Over-time
Hourly Rate .....	1.875	2.81	1.525	2.29	2.375	4.75
OAB Tax (.01) .....	.02	.03	.01	.02	.02	.05
State U.C. Tax (.009) .....	.016	.025	.013	.020	.021	.042
Fed. U.C. Tax (.003) .....	.005	.006	.004	.006	.007	.014
Insurance (.007) .....	.014	.019	.010	.016	.017	.034
Workmen's Comp. (.007) .....	.014	.019	.010	.016	.017	.034
Car .....	.25	.25	.25	.25	.25	.25
60% Billing Factor .....	.75	1.12	.61	.92	.....	.....
	2.94	4.28	2.43	3.54	2.71	5.17
15% Overhead .....	.44	.64	.36	.53	.41	.78
	3.38	4.92	2.79	4.07	3.12	5.95
Average Hourly Cost ....	3.64		3.00			

\*Average Hourly Cost is figured by adding 40 hours at regular time and 8 hours at overtime, and dividing this total by 48.

Pipefitter Rate .....	2.375	Apprentice, 2 years, 40% ....	.95
Class A Journeyman .....	1.875	Apprentice, 3 Years, 50% ....	1.1875
Class B Journeyman .....	1.525	Apprentice, 4 Years, 60% ....	1.425
Apprentice, 1 Year, 30% .....	.7025	Apprentice, 5 Years, 75% ....	1.78125





## Dollar Problem Bars Filling Strong Demand For U. S. Appliances In Southeastern Brazil

By Eugene Hesz, International Market Analyst

Brazil has its own economic pattern, and the southeast contains the economic heart of this exotic country. When surveying the country as a market for the United States exporter, bearing in mind of the following peculiar factors will be of decisive help:

1. A beautiful, modern, and efficient metropolis does not preclude a sparsely populated and much poorer backland.
2. Today's commercial harvests should not be considered as a permanent institution. The type of product which is cultivated is shifting, and so is the population.
3. Despite utter neglect and sinful methods practiced by the farmer, the soil may still be used, but often only for inferior agricultural projects—for example, coffee plantations disappear and pasture takes over.
4. Under the ground is embedded a vast reserve of rare metals and iron ore. This particular feature may

not be generalized but applies fully to the southeast of Brazil. The importance of the southeastern region for the economy of Brazil can not be easily over-emphasized. This will be demonstrated with the help of some statistics. The southeast contains both metropolises, Rio de Janeiro and Sao Paulo, which have surpassed the million population mark. Our readers know Rio to be one of the most beautiful of capitals. Besides Rio and Sao Paulo, there are only three other cities in the world situated in the tropics which are of the million-population size or larger. They are Bombay, Calcutta, and Hong-Kong (if one considers this British colony as one unit). Rio de Janeiro, while very much alive and on the alert, still cannot be fully compared to the big sister, Sao Paulo. Rio contains the capitol of the country and forms the big magnet

for that great mass of Brazilians who are profiting or have made their fortunes from the riches of the soil and wish to enjoy the advantages of the metropolis.

Sao Paulo, however, is the "Chicago of South America." The center of the modern industrial development of Brazil and the spearhead of its progress are in Sao Paulo. This despite the fact that the new steel plant in Brazil is situated in Volta Redonda near the capital, producing today about one half of the industrial steel needed by the entire country (about 400,000-500,000 tons of the finished product is the present yearly output).

The economic developments of the southeast, which have led to the formation of these two very large and prosperous cities, are identical with the history of Portuguese conquest, later of the gold rush in the province of Minas Gerais (translated: General Mines), followed by the fantastic coffee development, now partly superseded by rice, citrus, and other cultures.

Since every one of these different agricultural phases is followed by the formation of huge new pastures, only usable for breeding of livestock and related industries, the need for modern refrigeration equipment is obvious.

In order to obtain a measure of the importance of this part of the great Brazilian market, it seems advisable to list the main characteristics of this region and to show by some economic facts that the point of gravity of Brazilian business, including the demand for home refrigeration and commercial equipment, is concentrated largely in the southeast (see Table I).

## Discussing Locker-Plant Chain for S. Africa



The recent annual Frozen Food Locker Convention in Chicago proved extremely interesting to Murray Angus (left) of Sydney, Australia, talking here with Ray Farquhar, executive director of the Frozen Food Locker Institute, because Angus is on his way to South Africa where he expects to develop a chain of locker plants. "If it weren't for import restrictions, there'd be a terrific future for locker plants in Australia," said Angus, who was organizer and head of Marine Foods, Ltd., in Melbourne, active in the interstate fish trade.

Table 1—Some Characteristics of the Brazilian Southeast

	Temperatures °F.			Average Annual Rainfall (millimeters)*
	Daytime Average for Year	Maximum for Year	Minimum for Year	
State Capitals and State				
Niteroi (Rio de Janeiro) .....	72	107	46	1,225
Sao Paulo (Sao Paulo) .....	69	95	41	1,400
Belo Horizonte (Minas Gerais) .....	69	95	34	1,472
Vitoria (Espirito Santo) .....	74	99	49	1,431
Rio de Janeiro (Federal District) ....	73	102	50	1,050

\*25.4 millimeters—1 inch.

As stated before, the above region is just within the tropics. The humidity prevailing in the greater part of the region, combined with the actual measured rainfall, provides a wide field for useful application of every type of domestic and commercial refrigeration equipment.

In order to obtain an idea of the size of the population, such figures will be given here (see Table 2). They must be used with caution, as the actual percentage of potential buyers is by far smaller.

About half of the southeast's population is European stock. Some estimates go even higher.

The main European nationality represented is Portuguese. A large influx of Italian, Spanish, and German blood has also taken place.

About 40% of the population is urban and suburban; the remaining 60%, rural. In the Federal District, which contains the city of Rio de Janeiro, the rural percentage is much lower, only 12%.

The entire country has nearly 39,000 elementary schools. One half of this number is concentrated in the southeastern states. This corresponds almost exactly to reliable pre-war estimates of the business capacity of the Rio de Janeiro-Sao Paulo districts (about 50% of the country's entire business).

The strong economic boom of the last 10 years, especially in Sao Paulo,

has boosted this figure, and it is certain that a census of modern appliances would show that this region now contains more than 50% of the country's total. A careful calculation of the automobile population of this region shows that over 60% of all vehicles are located there, proving the point.

From the above it should not be concluded that this lively part of Brazil has been supplied with anything like the amount of electric home appliances which we are to find in the average American home. If the general standard of living continues to rise, this market should become increasingly interesting.

Much of the household equipment installed at present uses gas, which is more expensive than electricity in Brazil. However, the German and Swedish pre-war gas appliances still dominate most of the picture.

If we review the southeastern market, we find a strong demand for the modern American electrical appliance, particularly the products of our industry. This demand cannot be supplied at present, mainly because the foreign exchange policy of this potentially-interesting customer has resulted in international payment difficulties.

This dollar problem, which has been touched upon already by this column, still overshadows all other considerations, at present.

Table 2—Area and Population by States

States	Area In Square Miles	Population	Persons per Square Mile
Rio de Janeiro .....	16,372	1,990,000	103.22
Sao Paulo .....	95,459	7,703,500	81.01
Minas Gerais .....	228,469	7,310,000	32.00
Federal District .....	451	1,903,100	4,219.73
Espirito Santo .....	17,688	834,200	47.16
Total .....	358,439	19,740,800	55.07 (average)

## Is Frozen Condensed Milk Answer to Export Problem?

ATLANTIC CITY, N. J.—Frozen condensed milk may be an answer to the problem of exporting milk from the U. S. to needy European countries in a form that will be palatable, it was suggested by Sir Herbert Broadley, Deputy Director-General of the Food and Agriculture Organization of the U. N., speaking before the Dairy Industries Society here.

In producing frozen condensed milk, the milk is condensed by evaporation under vacuum and the resulting sticky mass frozen into solid blocks. These are re-converted into fresh liquid milk by the addition of water.

"I remember during the war period seeing some preliminary figures suggesting that such frozen condensed milk could be delivered at English ports from the United States at half the retail price at which liquid milk was then selling," said Sir Herbert.

"Clearly, such an undertaking could only be profitable on a large

scale, but it may be that here lies the possibility of considerable development among those who do not like condensed milk and dried milk in its present form."

## Rackin Heads Export Dept. of Economy Faucet, Subsidiary

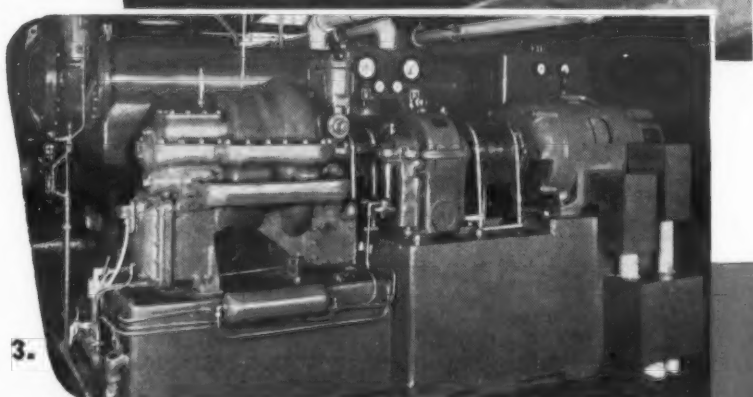
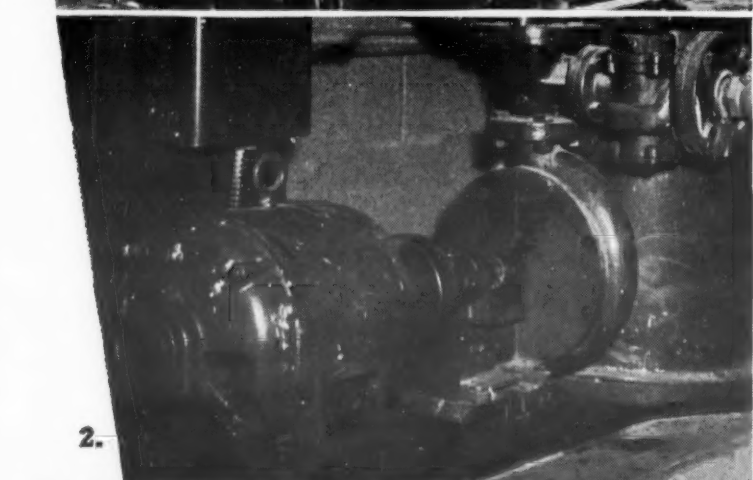
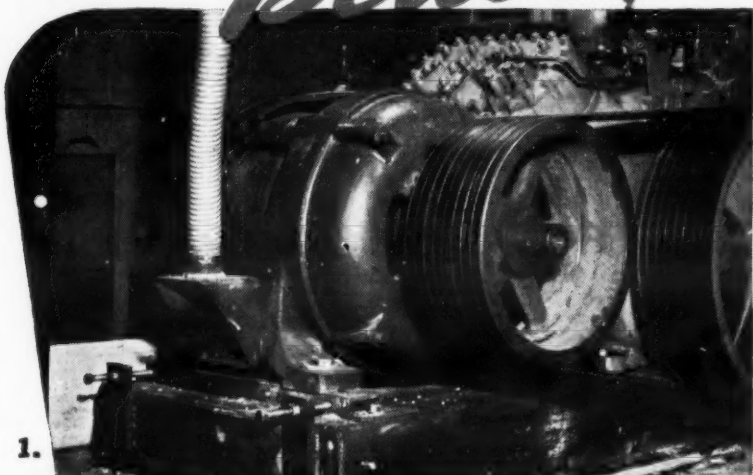
NEWARK, N. J.—Harold Rackin, of Rackin International, combination export manager, has recently been designated to manage the export department of Economy Faucet Co. and Eco Engineering Co.

Economy Faucet manufactures a line of water, seltzer, beer, coffee, and Universal faucets for use with bar, restaurants, and soda fountain equipment. Its subsidiary, Eco Engineering, manufactures a gearless pump.

## Bendix Names Distributor

SOUTH BEND, Ind. — Mohamed Said Alnakeeb, of Basrah, Iraq, has been named distributor for Bendix Home Appliances, Inc., in Iraq, Iran, Saudi Arabia, and Kuwait.

## Properly Selected CENTURY MOTOR Assures Better Performance



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2. Century 5 horsepower Type SC squirrel cage motor provides smooth quiet power for this vacuum feed pump.
3. Century 200 horsepower Type SR slip ring motor driving a compressor.

The high starting torque brings the compressor up to speed quickly and smoothly. The gear box increases the speed to 9,000 RPM.

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Among their advantages are: the right starting torque, unusual freedom from mechanical and electrical vibration, rigid construction, adequate ventilation system, accurate machining and long life bearings.

Century motors for the heating, ventilating and air conditioning industry help to build customer satisfaction because they operate smoothly and quietly throughout their long life.

Century builds a wide range of motor types in sizes from 1/6 to 400 horsepower to assure top performance for every electric power application.

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# Maintenance of Fans In Air Conditioning Includes Frequent Inspection and Cleaning

Proper operation of an air conditioning system depends on the efficient functioning of all the component parts, not the least of which are the fans. As the author of the following talk points out, "if the fan does not run... the other parts of the system are useless."

So, for the guidance of service and maintenance engineers the News is publishing the text of a talk delivered by Roy A. Stipp of the Buffalo Forge Co. before textile mill maintenance men at a class conducted in Winston-Salem, N. C. by the Bahnsen Co., manufacturer, distributor, and installer of air conditioning systems. Other talks given at these classes have been published previously.

By Roy A. Stipp, Buffalo Forge Co.

A centrifugal fan is a fairly simple piece of machinery, consisting of four major parts, only two of which are moving. The only close clearances are in the bearings. The clearance at the ring on the inlet of the wheel and the ring on the inlet cone should be held reasonably close, but this is in the order of sixteenths of an inch, not hundredths.

Despite its simple construction, the fan is the most important part of the air conditioning system. If it does not run, your air washer or humidifier, control system, and other parts of the system are useless.

With the present practice of brick-ing up the windows of mills, no natural ventilation is available, and when the fan stops the entire department is shut down very soon thereafter. You can add humidity with a hose and control by hand until repairs to the washer or control system are completed, but the fan must run. The first main part of a centrifugal fan is the housing or casing. This is a structure of heavy sheet metal, braced with angles or other steel shapes. It must be sturdy enough to prevent breathing and to hold the alignment of the other parts.

## Rotor Combats Distortion

The second part of the fan is the wheel which may also be called the impeller or the rotor. This must be of heavy enough construction to hold together and maintain its shape against the centrifugal force which tends to distort and throw it apart. It should be of a design to give the most strength with the least possible weight in order to lessen the load on the shaft.

The wheel must be balanced both statically and dynamically. Static balance can be checked by putting the wheel and shaft assembly on knife edges and adding weights until no heavy point shows up. Dynamic balance can be checked only by running the assembly in its own housing or in a balancing machine. The impellers are checked at the factory on a balancing machine that indicates quickly where the unbalance is located.

## Checking Fan's Dynamic Unbalance In the Field

In the field the unbalance must be located and corrected by trial and error which may require quite a little time to carry out. The wheel may be in perfect balance on the knife edges and still run unevenly because of dynamic unbalance.

The fan shaft must be heavy enough to support the wheel with as small a deflection or sag as possible. The amount of this deflection must be carefully determined and kept within certain definite limits for a given fan, which is to have a given top speed. This deflection is a measure of the critical speed of the shaft, which is the speed at which the shaft is in tune with the speed of rotation.

At this speed the shaft will act the same as a tuning fork which will vibrate with almost no effort expended if that effort is applied at the rate of vibration to which the fork is tuned. In other words, at this speed the shaft will vibrate whether the wheel is in balance or not and may cause serious damage.

This is not a point to worry about in the operation of fans, however, unless they are speeded up considerably above the recommended speed, since all standard makes and designs of fans have this factor taken into consideration with an ample factor of safety.

The size of fan bearings is determined by the size of the shaft as far as diameter is concerned. On many smaller fans, the size of the shaft is the same all the way through. On larger fans the shaft is cut down in

the bearings to reduce the rubbing speed and to keep the bearing size down for economic reasons. The length of the bearing surface in the bearing is made ample to keep down the bearing pressure to a low point to make for long wear.

Fan bearings must be designed for heavy thrust which occurs particularly on single inlet fans. On double fans the thrust is more or less balanced. Self-aligning bearings are, of course, preferable. Fan bearings must be designed to prevent the high velocity of air over the bearing from carrying out the oil. For this reason, a standard pillow block bearing may be very unsatisfactory as a fan bearing if it is to be in the air stream.

## Sleeve Type Bearings Prove Easier To Repair

The above applies only to sleeve type bearings, which are preferred by many because they can, in most cases, be repaired on the job in case of breakdown where replacements are not available. Ball bearings are used in many cases and are equally suitable for the service if properly selected.

Maintenance of the housing is about the same as for any other metal work, cleaning, and painting, except that it must be done more often because of the moist exposure. The combination of lint and other dirt with various chemicals that may come through from the process departments and the moisture condensing on the surfaces may cause fairly rapid destruction of any ordinary paint coating. After the corrosion reaches the metal, serious damage can occur in a relatively short time.

Therefore, frequent inspection, thorough cleaning, and painting with the best possible corrosion-resisting paint will pay large dividends. We do not recommend any special paint because conditions vary and one paint that is satisfactory in one plant may not be the best for another.

In Buffalo fans, the fixed inlet vanes may require more frequent attention than any other part, because, being in the direct path of the air from the washer, they act as eliminators for any water that might be carried over from the washer due to dirty eliminators or other causes and so are exposed to more moisture than the other parts of the fan housing.

If there is enough water present so that it tends to collect in the bottom of the fan housing, it is advisable to put a 3/4 in. or 1-in. hole at the lowest part of the fan casing so this can drain out.

## Wheel Needs Much Cleaning

The wheel will require more frequent cleaning than any other part of the fan. Accumulation of dirt not only may throw the fan out of balance, but in large quantities may also effect the fan performance by changing the shape of the fan blades. The wheel should be cleaned and painted the same as the housing.

In either case, it is important to be sure the metal surface or old paint surface is clean so the new paint will make a good bond. Paint should be applied as evenly as possible to the wheel so there will not be an excess on one side which would throw the fan out of balance.

As mentioned under design, the wheel is built for a given speed and has an ample factor of safety at this speed. In the original installation, the fan is generally selected to operate safely within this speed.

If it is ever considered necessary to speed up the fan, it would be advisable to consult the manufacturer or the installing contractor to be sure the increased speed is within the design of the wheel. Otherwise, a serious hazard may exist.

To run smoothly, a fan wheel must

be balanced, as mentioned before. It can get out of balance if dirt is allowed to accumulate, if a heavy coating of paint is applied to one side and not to the other, if some undue strain is put on the fan to pull it out of shape or if some foreign object gets into the fan to bend it in some way.

In some cases a few blades may require replacing, after which it is generally necessary to rebalance the fan. A fan can be rebalanced in the field by the trial and error method described in the Fan Maintenance booklet, copies of which you have.

In cases of considerable unbalance, it might be advisable to have a man from the factory to do the balancing. With his greater experience, the job can be done more quickly and possibly may give a more satisfactory result.

The shaft requires little maintenance. It is advisable to keep it clean and covered with a slushing compound. This will be appreciated if it is ever necessary to remove the wheel from the shaft. If the shaft becomes bent it is preferable to order a new one. It is not generally satisfactory to try to straighten the old one.

Sleeve or babbitted bearings should be inspected and lubricated at frequent intervals. General No. 40 or No. 30 SAE weight oil should be used. Oil that is too light will leak out and heavy oil may not be picked up by the oil rings.

## Care Is Vital In Filling Oil Cups Properly

The oil cups on a ring-oiled bearing should be filled when the machine is shut down. The oil cups should be filled to within 1/8 in. of the top. Care should be taken to see that there is no dirt in the bottom of the oil cup or in the connection from the cup to the bearing so that you can be sure that the oil flows from the cup into the bearing.

The schedule of inspection and oiling should be the same as for other oil-lubricated bearings in your plant. Bearings should be cleaned at regular intervals, draining the old oil, flushing out with kerosene or flushing oil, and refilling with a good grade of clean oil.

The interval of cleaning will depend on conditions and may be three months, six months, or a year. The best way to determine this is to drain out a little oil at about three-month intervals and inspect it to see if it is dirty or thin. No general rule can be given on the time of draining and refilling.

After refilling it is a good idea to check the operation of the rings by looking at them through the plugs in the top of the bearing housing. In this way, you can be sure the bearing rings are picking up oil and carrying it to the bearing surfaces.

Buffalo bearings can be dismantled by removing the top half of the bearing housing. This permits access to the liner, oil rings, oil shield and so forth. The upper half of the liner can be just lifted off. The rings and lower half of the liner can be removed by lifting the shaft a little and turning the liner to get it out.

In most cases of bearing failure, it is necessary to replace only the liner of the bearing. To reassemble the bearing, the reverse procedure is followed, putting the lower half of the liner in place with the rings, placing on the upper half of liner and oil shield and then installing upper part of bearing housing.

The adjusting screw on top of bearing housing may require some change in setting. This should not be pulled down too tightly or bearing will not get proper lubrication.

## Fan Should Be Hand-Turned When Bearings Are Changed

Fans should always be turned over by hand after making any bearing change to be sure all parts are clear and shaft is turning freely. When starting up after such a change always be sure to check oil rings through holes in top of bearing housing.

It is quite important that the oil shield shown in the bearing layout be installed exactly as shown. This catches the oil which the thrust collar flings up and prevents it from running down on the felt washer and

possibly outside the bearing.

Ball bearings should be lubricated about every 300,000,000 revolutions. The bearing housing should be filled about half full of a top grade soda-soap grease as recommended by your lubricant supplier. Ball bearings of special design or roller bearings should be lubricated in accordance with special instructions furnished. Additional copies of instructions will be supplied if requested.

Some fans are furnished with variable inlet vanes, also called by some manufacturers vortex control. These should be cleaned and painted the same as wheel and housing. The moving parts should be lubricated with a pressure grease gun through the fittings supplied. Bearings should be inspected and after long wear may require replacement.

## Fixed Inlet Vanes Protect Serviceman on Job

Buffalo ventilating fans are furnished with fixed inlet vanes which improve the efficiency of the fan and also improve performance under bad inlet conditions such as occur when fan is placed close to a wall and all the air must reach the inlet from one side. They also serve as a guard to prevent servicemen from falling into the fan when it is running. On fans which are not equipped with these vanes it is advisable to provide inlet screens as a safety feature.

Under extremely corrosive conditions fans can be furnished of various corrosion-resisting metals or can be rubber lined. Since the cost of such construction is generally quite high, a careful study must be made to determine whether it is economical to go to this special construction.

All fans for mill service should be

provided with access doors for inspection, cleaning, and inside painting. The type with a quick-opening latch is preferable. In some cases it is also desirable to have a section of the scroll that can be removed.

Where sleeve bearings are used it is very desirable to have a set of bearing liners on hand as spares. They are not too expensive and permit a quick repair in case of trouble. If wheel and shaft are properly taken care of, there is not too much chance of a breakdown and there is sufficient time to order replacement parts.

In ordering repair parts, complete information should be given. The most important part is the fan serial number which is on the name plate and also generally stamped on the end of the shaft. If this cannot be given, you should give a complete description of the part required with all major dimensions. Also, if possible, give the approximate date fan was purchased and installed and the name of the contractor who made the installation.

An order simply for a shaft for a No. 5 fan does not mean much because a manufacturer may have a dozen types of fans in which there is a size 5 and these may have been redesigned from time to time requiring some change of shaft size. Such an order is just held up until further information can be obtained.

Where fans are belt driven, either by flat or v-belts, care should be taken that the belts are not too tight. If they are, excess pressure on the bearings will result which may cause bearing failure.

A relatively small amount of time spent in taking care of fans will pay large dividends in satisfactory operation.



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# Many Provisions of Taft-Hartley Act May Remain 'On Books' If Law Is Repealed

CHICAGO—Even if repealed, the Taft-Hartley Act will continue to affect businessmen because many features of it will then probably be incorporated into a new law.

So E. J. O'Keefe, of O'Keefe & Walters, Chicago, told the recent annual convention here of the National Association of Refrigeration Contractors. Reporting on what has happened and is currently happening to the original provisions of the act, O'Keefe said:

"The act, you recall, outlaws the closed shop but does allow a union shop where a majority of the workers involved vote to have it. The union shop provided under the law, in brief, makes becoming a member of the union after 30 days' employment a condition of employment. . . .

"For the most part, the holding of an election in your shop will almost automatically mean the union winning the election. Unions lost only a few more than 300 elections out of over 19,000 held. In some cases the law actually helped unions in that it made denying union security by the employer very difficult in the face of an overwhelming vote in his shop.

"Even before the Presidential election there was considerable talk and even proposed legislation to remove this union shop election provision from the law, but I personally feel it should remain for the following reasons:

"First, it still allows for a choice as we must remember that some 300

elections resulted in no union shop; second, in order to participate in an election of this type, the union must comply with the law in the non-Communist affidavit and financial reports provisions. . . .

"This matter of non-Communist affidavits and the financial statements should be of interest to you. After one year's operation over 5,600 AFL locals, over 1,300 CIO locals and over 1,300 independent locals were in compliance. . . .

"Most of the big unions have been interested in testing the constitutionality of these parts of the law, and as far as filing the financial statements is concerned, this has already been upheld by the Supreme Court. A test of the constitutionality of the non-Communist affidavit requirement can be expected in the very near future.

## Employer Affidavit 'Fair'

"Incidentally, there is talk that in any new law, as a result of the election, that the employer as well as the union should file a non-Communist affidavit. This seems basically fair.

"Strikes, of course, are always of interest, and you can remember certain limitations placed upon unions in the Taft-Hartley Act in this respect. For the most part, this, plus making unions liable for suits, has caused considerable change in union contract provisions.

"Unions are being very reluctant

to include any type of no-strike clause in the contract. Many of the clauses put in union contracts recently, where no-strike provision is retained, clearly relieve the union of any responsibility for strikes that are not condoned by the union. . . .

"Another general effect of the strike and boycott restrictions in the law is the tendency by unions to tighten up their internal workings in respect to calling strikes. Many of these internal changes establish elaborate procedures that must be followed within the union before a strike can actually be called, and they also outline certain behavior that union representatives must follow in the event of an authorized strike.

## 'Try for No-Strike Clause'

"Try to negotiate a no-strike clause, but be prepared to offer some protection to the union. Any new law will probably change the strike and boycott provisions of the present law, but not to any great extent.

"The injunction process available to the Board, under the law, which is closely associated with the subject of strikes, was used frequently. With very few exceptions, the courts granted the relief requested by the Board. Here is a sore spot to labor and much change will be sought in this respect by a new law.

"The ban on political expenditures included in the law has been deliberately tested by some unions, but for the most part ignored. The test so far has produced no real concrete ruling on the issue, but a real test of constitutionality is expected in the near future. I wouldn't doubt this may be changed if a new labor law is passed. . . .

"The law . . . seems to give opportunity for craft unions to organize a small craft segment of a plant rather than have the whole plant under one union. The figures seem to indicate that the Board in its ruling has followed the popular interpretation of the law. . . .

"In your industry, I imagine, a tradition of having foremen be members of the union is not uncommon. The law has done much to change this practice, but for the most part unions just for foremen have been killed off by the law's provisions that exclude foremen and supervisors from the protection of the law.

## Conflicting Viewpoints

"Coverage of the law over the construction industry is of importance.

"Mr. Denham, the Board's General Counsel, apparently feels that all employers and unions in the construction field are automatically covered by the law. But the Board itself, except in cases where the contractor obviously operates on a national basis, apparently questions Mr. Denham's reasoning.

"The Board wants to know, before it decides on a particular contractor, such things as: How much of his materials come from out of the

states; the importance of the project the contractor was working on when the question before the Board arose; and many other details.

"Considerable more Board experience is going to be needed before anything definite is said on this subject.

"A recent Board and Court decision is certainly of interest and certainly will affect you. This decision makes pension and retirement plans a subject for bargaining. If your union, therefore, at the time of your next negotiations wants to bargain some such plan, you cannot dismiss the point by telling the union your pension or retirement plan is none of their business.

## Little Change Foreseen

"I can't foresee much change by a new law on these last few matters we have been discussing.

"Let us turn now to another piece of legislation that so intimately affects businessmen and which is within the labor relations field.

"The Fair Labor Standards Act is an old piece of legislation, but, as in the case with most laws, is subject to interpretations that give it that 'new look.'

"About a year ago portal-to-portal pay lawsuits were in vogue. It was found necessary in order to correct this or really to provide a clear and practical interpretation of the Fair Labor Standards Act to have Congress pass the Portal-to-Portal Act. . . .

"We have just recently had a new and different interpretation of the Fair Labor Standards Act. This new interpretation was finally formalized by the Supreme Court in its Bay Ridge Case decision, decided in June of this year, setting up the overtime on overtime problem.

"Most observers feel that legislation to clarify and provide practical interpretation on this problem is forthcoming.

"Basically, this problem is one of determining just when an overtime rate is a true overtime rate and not a premium rate.

## Overtime on Overtime

"For some time now, union contracts—and in many cases company policies only—have provided for time and one-half for Saturday work and double time for Sunday work. The Supreme Court said that this time and one-half and this double time, even though called an overtime rate, is not true overtime but rather is a special premium paid for disagreeable working days.

"You can well see the impact of this decision in that all of industry has, up to now, been treating this as overtime and offsetting it against the overtime due to their employees under the law. Incidentally, the law provides in cases where the overtime due is not paid to the employee, the employee can sue for double, the amount, plus attorney fees.

"In the Bay Ridge Case, the employer and even the union involved in the negotiating of the union contract claimed that it was not their intention to set up a special rate for these days. The Supreme Court, however, ruled that the wording of the contract and the actual payment policy and practice of the employer

clearly showed it to be a special rate and that nobody, including the union, could bargain away the rights of the individual employee.

"Let us look now for a minute at what the Administrator of the Wage and Hour Act has had to say about the Supreme Court decision. The administrator at the outset indicated that he was going to delay enforcement in order to give employers an opportunity to work with their unions or in the absence of a union to revamp their overtime policies.

"He later further delayed the enforcement until the Supreme Court would rehear the case, but when the court decided they would not rehear the case, he began enforcement on Oct. 18, 1948.

"In one of the administrator's releases, he indicated that in enforcement he would look also at the actual practices despite what the union contract provided and where it appeared to him or his inspectors that the rate paid on Saturdays or Sundays, for instance, was being paid because the man worked excessive hours, he would consider that rate as a true overtime and not a premium rate.

"You can see where this would be very helpful in the case where the man worked the full five-day week before Saturday and Sunday.

## Wage and Hour Ruling

"In another release, . . . he ruled to be in compliance a contract wherein an overtime rate is paid on the sixth and seventh days of the work week because they are in excess of a fluctuating bona fide straight time work week.

"In other words, this contract provided that in weeks in which an employee received excused leave during the first five days of the work week, an overtime rate will be paid for the hours which were in excess of 40 hours minus the number of hours for which excused leave was granted.

"An overtime rate apparently can be treated and will be treated as a true overtime rate where it is given for work performed in excess of some bona fide standard (the law says overtime must be paid at least after 40 hours) and nothing in the law prohibits an employer and his employees from agreeing on a bona fide straight time work week upon the happening of a condition.

"It is this latter that is done when you are agreeing on excused leave causing a bona fide straight time work week of less than 40 hours. . . .

"I strongly suggest that if you have not done so up to now that you very carefully study the effects of this decision on your operations and make arrangements to minimize the difficulties that arise.

"Besides Federal laws, there has been much activity recently in various states in the field of labor legislation. Many of these are in process of being tested right now.

"Recent National Labor Relations Board decisions and general economic conditions will probably result in more union demands on matters along the lines of long run gains. You had, therefore, better be well acquainted with such things as hospital and accident insurance, pension plans, guaranteed wage plans, and many other long-range programs."

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## What's New

### Coldin Showcase Features Display Counter Top



with polished aluminum trim which serves as a counter, scale stand, or display top, according to Coldin.

Other major features of the unit include an all-porcelain interior and exterior, fluorescent lighting, a triple-glazed front, and full-length sliding rubber doors in the rear of the cabinet.

NEW YORK CITY—Introduction of "a new type of showcase for commercial refrigeration" was announced by Coldin Cabinet Co. here.

The new case has a formica top

The case is available in eight models, remote and self-contained, ready to plug in. Production is well under way and delivery can be made within two weeks, the company said.

### Santocel Permits Smaller Cabinet for Whiting 8, 17

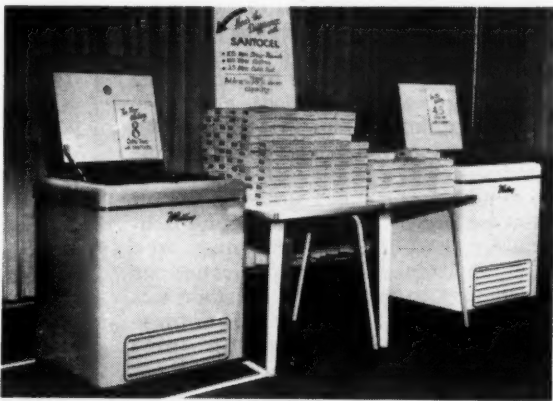
CHICAGO—Development of food freezers with 8-cu. ft. capacity—yet small enough to fit into kitchens of normal size—has been announced by the refrigeration division of Whiting Corp.

Announcement of the new Whiting 8 was made by Howard R. Roberts, refrigeration sales manager, at a recent distributor's meeting in Cleveland.

"With absolutely no change in exterior measurements, the Whiting 8 gives the customer more than 77% additional capacity," Roberts said. "Also, in the field of large freezers, the new Whiting 17 provides 17 cu. ft. of storage capacity in space that formerly held only 12 cu. ft."

"These remarkable capacity increases have been achieved through the use of Santocel, revolutionary new insulation, developed by Monsanto Chemical Co. Santocel's superior insulating value has enabled us to cut freezer-wall thickness in half—and still produce a unit with improved freezing efficiency."

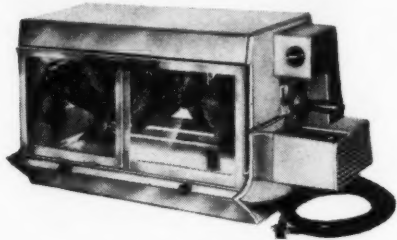
In a space 27 in. by 36 in. by 32 in., the Whiting 8 is said to provide ca-



capacity for 280 lbs. of food storage. Through this extra capacity in small space, the Whiting 8 makes it possible for apartment families to have a full-size freezer, it was pointed out.

"The Whiting 17—only 27 in. wide and only 5 ft. long—can go through a standard doorway and can be fitted easily into a normal utility room," Roberts declared.

Successful use of Santocel for freezer insulation is a combined achievement by the engineering departments of both Monsanto and Whiting, marked by development of an automatic machine-operated pressure-packing process.



### Rotiss-O-Mat Introduces Commercial Barbecue

ASTORIA, N. Y.—An all-electric commercial barbecue for restaurants, hotels, grills, and roadside stands has been introduced by the Rotiss-O-Mat Corp. here.

Called the Rotiss-O-Mat Royale, the barbecue is said to be self-cooking, self-turning, and self-basting. It will handle 35 lbs. of meat at one time on its 30 in. stainless steel skewer.

In addition, the accessory flat grill will broil 50 hamburgers, steaks, chops, or frankfurters, or toast sandwiches, muffins, or biscuits.

The Rotiss-O-Mat Royale measures 36 in. long, 18 in. wide, and 17½ in. high. It is equipped with a ½-hp. motor and operates on 110/115 volts, 60 cycle, alternating current. It is rated at 3,150 watts, 28 amps.

The heating element maintains three heats: a high, 3,000 watts, for searing; a medium, 1,500 watts, for slow cooking; and a low 750 watts to keep foods warm.

The unit is constructed on heavy duty stainless steel and has removable heat resistant glass doors. The drip pan is also removable.

List price is \$295.

## SANITARY'S NEW 6 cu. ft. and 4 cu. ft. Electric Refrigerators are now available.

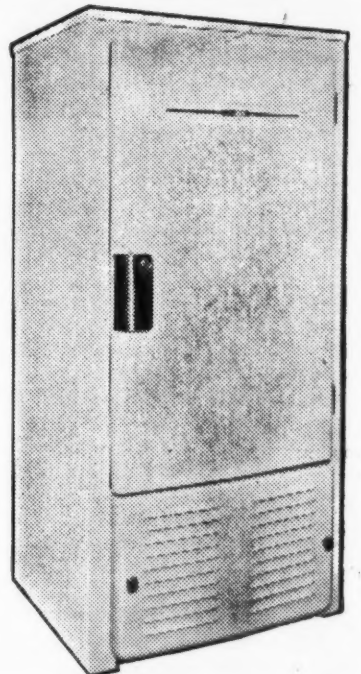
No. TE62 Illustrated—

23½" w. x 22¾" d. x 50½" h.

Also Available—Model TE46—

4 Cu. Ft. Size—

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## SANITARY REFRIGERATOR COMPANY

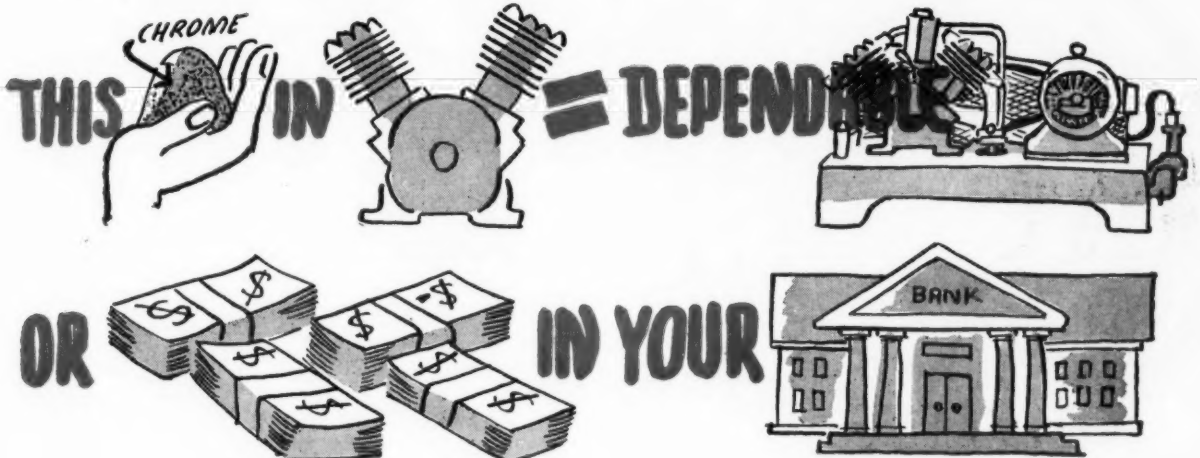
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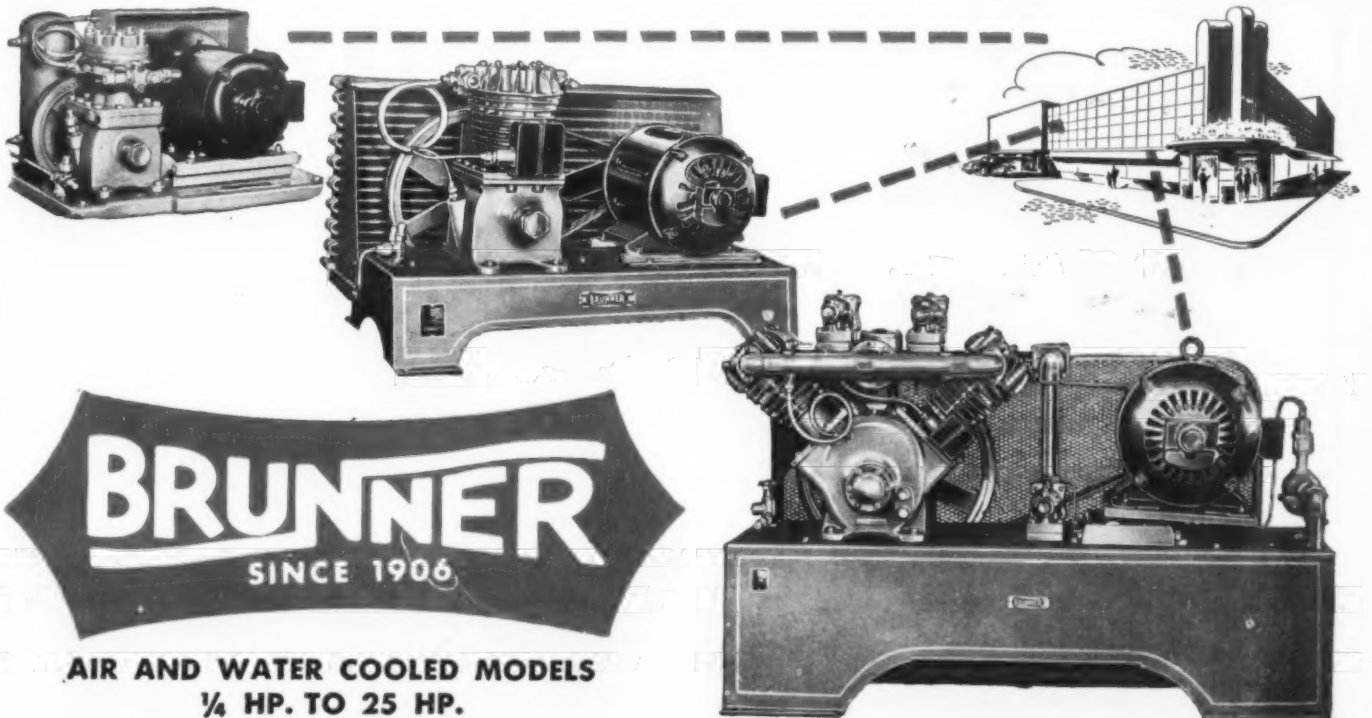


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# NARC Hears Arguments For & Against Refrigeration Contractor Licensing

## Properly Administered Licensing Is Definite Benefit to Public, Detroit Official Declares

"Benefits to Public Under Licensing"

By John C. Rehard, Chief Refrigeration Safety Engineer, Detroit

Perhaps in discussing the benefits that accrue to the public from licensing refrigeration contractors, it should first be pointed out that it was none other than the public which first brought about the necessity for licensing. In Detroit we have had a working safety code on refrigeration since 1916. But unscrupulous individuals making unsafe and otherwise faulty refrigeration installations had jeopardized human life and caused needless expense and trouble.

We ourselves don't want to license anyone, but we had no way of finding the jobs put in by unscrupulous contractors. The most respectable refrigeration contractors themselves recognized the problem that was confronting the public and played a very definite part in the proposal to license contractors as a means of eliminating the difficulty.

Consequently our first refrigeration contractor licensing provisions in the city of Detroit were passed in 1937, as a result of the clamor on the part of the public for safer, better, and more reliable refrigeration installations.

This original provision did not take into account the examination of the contractors to establish their fitness to engage in the refrigeration

installation and servicing business. Our primary purpose was to insure safety. Another reason was to find the work. We couldn't police the city.

After a trial of a little over eight years, it was found that people were obtaining licenses under false pretenses, and that, while reliable contractors were doing their work in accordance with city requirements, unqualified contractors, although licensed, were still jeopardizing the public safety and welfare. We still had unscrupulous individuals installing jobs without permits.

Accordingly, in 1945 the city of Detroit inaugurated its first examination requirements for refrigeration contractors. Under this method of granting licenses, the would-be contractor is first interviewed by the Board of Examiners to ascertain the reliability of his statements in connection with his experiences and his education.

He is then subjected to a written examination which, if passed, entitles him to an oral examination conducted by the examining board. The examination questions, both written and oral, are practical, and they are predicated on the applicant's having three years' experience. If, however, a man slips a little on the written

examination, he has a chance to retrieve himself on the oral exam. Upon his successful completion of these examinations, he is bonded and licensed by the city of Detroit to practice his trade in accordance with his qualifications and the provisions of the ordinance.

The public benefits to the extent that the contractor is responsible to the city of Detroit and its citizens for being permitted to practice his trade, and any violations of code requirements or of the principles of good practices are punishable by fines.

Along with the license, a bond,

running to the city of Detroit, is also required. This constitutes an additional means of satisfying the demands of the public in extreme cases. Fortunately there have been but very few cases where licenses have had to be revoked or suspended and still fewer where the bond had to be forfeited.

However, in the light of recent developments that involve approximately 1% of the contractors who are consistent violators, it has become necessary to establish a more or less definite court procedure for these cases. Under this present plan three court convictions in any one year for infractions of the law will make revocation of the contractor's license mandatory.

The effect of our licensing provisions has been to produce a better, safer, and more uniform quality of workmanship. In addition, the "gyp artists" and the excessive expenditures by customers that they cause have, at least to a certain extent, been eliminated. It has also insured a far higher safety factor through a more reliable group of individuals as contractors, and has, in general, made for a safer city.

In fact, the operation of our refrigeration contractor's licensing provision, along with other contractor licensing provisions, has proven to be successful to such an extent that recent abuses of our Fuel Oil and Oil Burner Ordinance have forced us into the licensing of oil burner contractors in an effort to again bring up to par the safety standards in that field. Recent cases in this field, as well as in the refrigeration field and other fields, are responsible for the crackdown just mentioned.

It should be pointed out that the licensing provisions in the city of

The full panel discussion of licensing as presented before the recent National Association of Refrigeration Contractors convention is presented on this and following pages. These presentations from varying viewpoints are followed by a resume of discussion from the floor.

Detroit are not a means of raising revenues other than those necessary to offset the costs of administering the license laws, and no political influences are involved.

We firmly feel that licensing of engineering functions for the sole purpose of raising revenue is of no value in promoting safety and the welfare of the public. Likewise, the entrance of any political aspects into the licensing of persons for the practice of trades or professions should be strictly forbidden.

The safety and the welfare of the public are of prime importance and should remain the sole consideration.

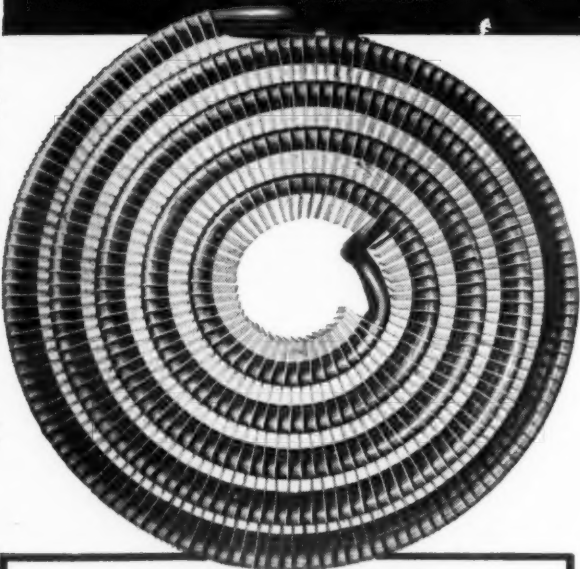
We feel that our licensing provisions have definitely benefitted the public and the public's safety and welfare. The public and the contractors themselves seem to be of the same opinion, and, with a few exceptions, all cooperate to help ferret out the unsafe practices.

To summarize, I wish to say that the public originally demanded a means of assuring that refrigeration equipment would be safely installed, maintained, and operated. The licensing of contractors, along with a sensible working code and an operating ordinance, have proven to be suitable means to that end. We believe that contractor licensing, properly administered, is a definite benefit to the public.

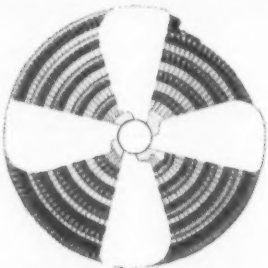


Frederick R. Bolton (extreme right), executive secretary and counsel of the Refrigeration Contractors Association of Detroit, acting as moderator, opens the panel discussion on licensing during NARC convention. Awaiting their turn to speak are (l. to r.) Nathan Edelstein, Refrigeration & Air Conditioning Guild, New York City; Neal S. Templin, Refrigeration Contractors Association, Inc., Los Angeles; William B. Henderson, Air Conditioning & Refrigerating Machinery Association; John C. Rehard, chief refrigeration safety engineer, Detroit; and Leslie D. Price, National Electrical Manufacturers Association.

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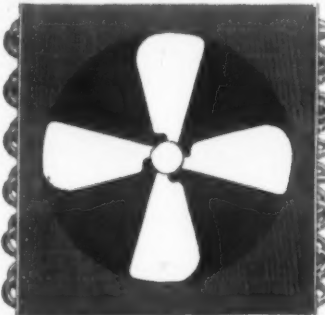


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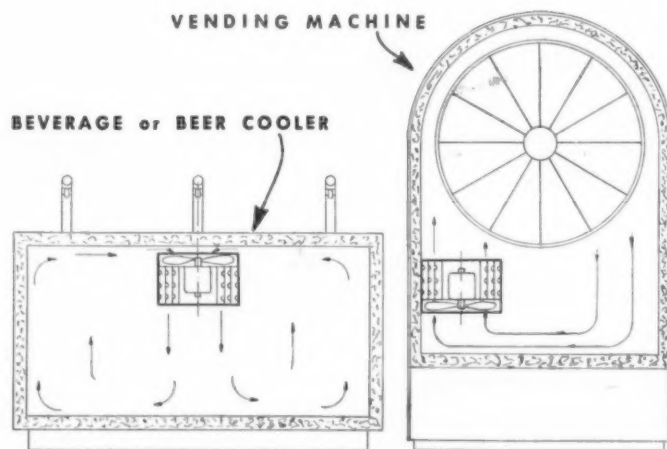
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## NEMA Opposes Licenses As Fostering Abuses Detrimental to Electrical Industry

"General Licensing Experience"

By Leslie D. Price, Manager, Engineering & Regulatory Legislation Departments, National Electrical Manufacturers Association

State laws and municipal ordinances which affect the electrical industry affect all branches of the industry, including the contractors, the manufacturers, wholesalers, dealers, labor, and utilities, and the public. In order that the industry may prosper, all branches of the industry must work together.

Each branch of the industry is dependent upon every other branch; therefore, all are concerned with what the other fellow is doing. If barriers are erected by any group or segment of the industry to impede the growth of the industry, all groups and segments suffer.

The refrigeration industry is closely related to the electrical industry. Its legislative problems parallel those of the electrical industry closely. We are both concerned with laws and ordinances which effectuate installation codes; we are both concerned with contractor licensing legislation. Other segments of the construction industry have similar and parallel problems. The effects of contractor licensing legislation on the electrical and other construction industries, and particularly on the contractor groups of those industries should therefore furnish a guide to the refrigeration industry in determining its policies regarding contractor licensing.

You men, representing the refrig-

eration contractors are, of course, interested primarily in the effect of licensing on your own group. But, almost equally, you are interested in the effect on the whole refrigeration industry.

Having considered the problem from all points of view, Nema has come to the conclusion that licensing of contractors does more harm than good to the electrical industry. This conclusion has not been reached hurriedly. Over many years, and as a result of observation of the results of contractor licensing, Nema has changed from a position of neutrality to that of opposition.

The reason may be summed up briefly in a simple statement: that contractor licensing provides the means for abuses which are detrimental to the industry, to the contractors themselves, and to the public.

What are some of the factors leading to this conclusion?

Licensing statutes of states and municipalities are idealistic, conceived in the public interest. These laws or ordinances are claimed by their advocates as necessary in order to protect the public against abuses. Ordinarily when the abuses within the industry become prevalent, the public insists upon control.

In the construction industry—and this includes the refrigeration industry—(Continued on next page)



## NEMA Cites Abuses of Licensing Codes--

(Concluded from preceding page)

try—this is not generally the case. Ordinarily, the majority of those affected by governmental control resist governmental action designed to limit their freedom to do business as they see fit.

No type of governmental regulation is thought of by businessmen as being more objectionable than a licensing provision in which the right to enter or continue in an industry becomes subject to governmental control. Again, this is not so in the construction industry. It is natural that the public should wonder why this paradox exists.

It may well appear to the public that contractor groups, possibly without examining for themselves the pros and cons of licensing, have furnished the incentive for proposing such governmental control for the purpose of advancing their own interests. Possibly, we could examine a few case histories, which may substantiate this thought.

1. Licensing may be used to bolster the position of a group of certain contractors by limiting the total number of persons entering in contracting work and thus reducing the intensity of competition with each other. There are many cases on record where licensing has been used to limit the industry to its present size, or to reduce the rate of expansion by new companies.

### Industry 'Birth Control'?

There have been two cases within the electrical industry, recently reported in the public press, where electrical inspectors and members of boards of examiners have been sued by individuals who have been refused electrical contractor licenses. In both cases, the complainants were local electricians who wished to enter the contracting business but who were denied licenses for what they claimed to be insufficient reasons. Such limitations to new entrants into the contracting business have been referred to by some as "industry birth control."

2. Licensing has been used to prohibit business enterprises from performing certain functions which may be considered as falling within the scope of activity of other groups.

For example, a sub-contracting group which finds its jurisdictional claims disregarded by another may invoke a license law to establish and perpetuate its own ideas of jurisdiction. A Pennsylvania licensing law has been used to protect plumbers against the piping work being done by other contracting groups.

Under this statute, only registered master plumbers and registered

journeymen in their employ are allowed to make connections with water pipes. An electrical contractor was prosecuted under the statute for connecting an electric water heater to water pipes in a residence.

Refrigerating contracting similarly involves electrical work and plumbing work. It is obvious that as the hands of one contracting group are tied by legislation promoted by other groups, counter legislation is inevitable. As restrictions are imposed through licensing regulations, and plumbers and electricians may be required to complete refrigeration installations, the cost of installation of refrigeration equipment is obviously increased without justification. The result is either rebellion on the part of the public, or loss of business because some other industry is competing more successfully for the customers' dollars.

3. Licensing laws are also used by contractors of a particular locality to keep the local market for themselves by excluding contractors from other localities.

### Interstate Business Hurt

The effect of this, of course, is the erection of barriers around municipalities and states. As barriers are erected around one municipality, similar barriers are erected around adjacent communities in retaliation. As a result, contractors desiring to do business in several sections of a state, or desiring to do interstate business, must attempt to obtain licenses in all of the areas involved.

In many cases, the examining boards, being somewhat less than impartial, find that applicants are unqualified for licenses. In other cases, the licensing fees are so exorbitant as to increase unduly the cost of doing work in the territory.

A striking example of this had occurred recently when a friend of mine, a competent electrical contractor in Newark, N. J., attempted to obtain a license to do some construction work in the city of New Brunswick. He is an electrical engineer and has several engineers on his staff. However, neither he nor members of his staff have been successful in passing the required examination for a license in the city of New Brunswick.

### State Licensing No Answer

Some contractors have advanced the thought that the answer to this is state licensing. This, of course, merely extends the artificial barriers to state lines. New York contractors could not operate in the state of New Jersey, neither could New Jersey contractors operate in the state of New York, unless, of course, the necessary licenses could be obtained.

In the case of the state of Minnesota, state licensing of electrical contractors has been in effect for some time. However, home rule predominates, as it does in many states, and the cities of Minneapolis and St. Paul superimpose municipal licensing on state licensing. A man must first obtain a state electrical contractor's license and then take examinations in either or both of the twin cities, depending upon where he may wish to qualify for electrical contracting work.

It is made perfectly plain that, whereas the state license is a necessary requisite for the municipal licensing, the state license does not provide any guarantee that the applicant will meet the municipal requirements satisfactorily.

4. Licensing laws may sometimes be used as convenient devices with which to limit the extent of competi-

tion. Since such endeavors are in danger of attack under the anti-trust laws, they are not often explicitly avowed.

Success in contracting, like success in any other business or profession, requires conformity to ethical standards of conduct. Those who do not adhere to such a standard of conduct in carrying on their business will be eliminated from the field by dissatisfied customers through the natural laws of competition. Furthermore, there is no way of determining a man's integrity through examination. Governmental control cannot remedy this situation.

Quoting the *Electrical Contractors News*, November, 1947:

"It has been our contention that the contractor who depends on a restrictive license system to sell his work to the public does not deserve the business assurance which the license gives him. If the contractor cannot give his customer a better job and more for his money, then there is no justification for that contractor to remain in business."

In conclusion, I should like to quote from a letter addressed to Larry Davis of the National Electrical Contractors Association from Charles L. Eidlitz, the first president of the National Electrical Contractors Association.

"Looking back over my many years of activity in the electrical contracting industry, I have one great regret as I view the result of my error. What I have in mind is my activity in bringing about the licensing of electrical contractors. At the time this appeared to me to be a great step forward but as I have since realized, it has practically resulted in ruination of the business."

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## Calif. Contractor's Experience Under State, City Licensing Laws Reviewed by Templin

By N. S. Templin, Executive Secretary,  
Refrigeration Contractors Association, Inc., Los Angeles

For nearly 20 years, since 1929 to be exact, any contractor doing construction or repair work of any nature on real property in the state of California has been required to hold a state contractor's license. Concerns installing and servicing air conditioning and refrigerating plants that are so affixed to the realty as to legally be a part of the real estate must hold a state contractor's license to either install or service such installations.

To obtain a state license a qualifying written examination must be passed by the applicant. This consists of two parts, the first covering general subjects such as the laws of the state on building, safety, employment, wages, compensation insurance, mechanics liens, and so on, together with some questions on business administration and records.

The second part of the examination consists of a rather simple test of the applicant's knowledge of the specific field in which he desires to engage.

An applicant further must show a reasonable amount of experience in the type of contracting he intends to enter, either as a craft mechanic, or an employee of others, and must also submit satisfactory character and business references.

The whole theory of administration by the state is not to try to restrict or restrain any competent person from entering any field of contracting, but rather to see that those who

do are of the proper caliber and have sufficient intelligence and basic knowledge so that the danger of the buying public being misled or gypped is minimized.

Enforcement of this statewide licensing law is three-fold:

First, doing work covered by the law without holding a license is an unlawful act punishable as a misdemeanor by criminal prosecution.

Second, a license may be suspended for a time, or revoked, for any of several grounds set forth in the law, upon due hearing by the state license board. The grounds for suspension or revocation include such things as abandonment of work, diversion of funds or property, willful departure from plans or specifications, willful disregard of any building code or of safety, labor, or compensation laws, failure to keep adequate records, failure to complete a contract for the price stated or to pay labor and material bills from funds received from the job, etc.

Third, and in our opinion the strongest teeth in the law, is the provision that an unlicensed contractor cannot sustain an action in any court in the state to collect money for work done that is covered by the act.

Now as to the contractors' experience under this 20-year-old law. I know of no one, whether he be a general building or engineering contractor, or a sub-contractor doing

specialty work who does not consider this law and the requirements imposed by it to be fair and just and who would prefer not to have it in effect.

There is a certain additional confidence inspired in dealing with a licensed contractor that might otherwise be lacking.

In addition to the California state contractors license, several municipalities in the state have licensing requirements for various types of contracting work. Specifically the cities of Los Angeles and Long Beach, to name only two, have ordinances requiring the qualification by examination of any individual or firm doing refrigeration or air conditioning contracting in those cities.

Their coverage of such work is more complete than the state's, not being limited to work done on real property alone. The Los Angeles ordinance reads, "One act of contracting or undertaking for a consideration to perform or furnish directly the work and labor of installing, altering, repairing, adding to or servicing any refrigeration system, or to perform directly the repair or servicing of any unit refrigerator, shall constitute engaging in the business, within the meaning of this part."

It further says "No person shall act as, or represent or advertise himself as being a Refrigeration Contractor, unless such person holds a valid and unrevoked certificate of registration."

To obtain a certificate of qualification in Los Angeles an applicant must pass an examination consisting of a written test, practical tests as may be required, and an oral interview before a three-man city board, at least one member of which is a contractor. The board is charged with giving an examination that shall, in its judgment, be sufficient to show that a person passing it has sufficient knowledge of the theory and practice of the refrigeration contracting business and trade to engage in the business without jeopardizing public safety.

There is a certain overlapping jurisdiction between the state and local authorities although there have been at least two court tests of similar problems, carried to the highest court in the state, both of which have held that a city is without power to require a contractor already qualified under the state law to submit to examination by the city.

Where the qualifying requirements are fairly imposed and there is no attempt made to refuse a license for any cause other than incompetency, our experience is that such licensing is helpful to both the public and the contractor.

Enforcement of a city licensing ordinance follows generally the pattern of the state law in California, that is doing business without one is usually a misdemeanor, punishable as a criminal offense, it may be suspended or revoked for cause but there is not the additional teeth of liability to sustain action for money owing as is in the state law. However, the cities, under their police power, have the right to stop a job from going in or running if the installation is made by an unlicensed contractor. A permit to install will not be issued to anyone but a licensed person.

There is a third type of license that is imposed by many cities that we do not like so well but frankly can't seem to do much about. That is the so called Business License or Tax imposed for the privilege of doing business within the boundaries of the particular municipality. This is normally imposed purely for revenue purposes and the tax may be established at a flat sum, or be based on a sliding scale according to gross receipts, or some other plan.

The cost of maintaining the many such business licenses for any one doing business in a sprawling metropolitan area such as Los Angeles is so high that many concerns either limit their activities to certain portions of the area or do business without the formality of securing all the business licenses they should have in the hope that they will get away with the violation.

In closing I would like to quote the statement of policy on licensing recently adopted by the Los Angeles Association to show our position:

"We favor uniform licensing of refrigeration and air conditioning contractors, provided such licensing is based on proficiency and not for trade restriction. We further favor statewide licensing regulations and support uniformity among requirements imposed by the several states. We recommend and are in favor of local licensing where there is no statewide licensing. In addition we advocate the adoption of uniform safety codes by authorities having jurisdiction, to adequately protect the health and safety of the public."



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## Careful System of Inspections Would Avoid Disadvantages of Licensing

"The Case Against Contractor Licensing"

By William B. Henderson, Executive Vice President,  
Air Conditioning & Refrigerating Machinery Association, Inc.

There can be no disagreement between us on the basic premise that the industry can progress and prosper only by giving the users of the products of our industry the best possible equipment and service at the lowest possible price.

The industry is injured by anything which retards industry progress; which harms or hampers the industry's ability to increase its services to its customers in providing constantly-better equipment at lower prices; or which diminishes individual ingenuity and initiative through agreements—even when such agreements are ratified by municipal ordinance or state law. I believe contractor licensing falls within this description.

We are all aware that some abuses exist in the industry. NARC has recognized this in published statements, one of which says: "Unless prevalent abuses and conditions (in the industry) are corrected voluntarily, by the contractors, in conjunction with the other segments of the industry, detrimental and restrictive legislation is bound to be passed by city and state governments."

Implicit in this statement is the concept that existing abuses can be corrected voluntarily by contractors, but that if such voluntary correction is not made, "detrimental and restrictive legislation" is the inevitable result. It seems to me to be a fair interpretation of the NARC statement to say that it reflects the idea that any legislation to correct abuses in this field, where voluntary action is believed to be the real remedy, would be detrimental. Having made this general statement of position, which may have some merit, NARC then takes the completely-inconsistent position of attempting to saddle itself and the industry with detrimental and restrictive legislation at the local and state level.

### INHERENT EVILS

My objections to contractor licensing are deeply rooted and stem from my firm conviction that the evils inherent in such legislation are much more dangerous than the abuses sought to be corrected. I will concede the nobility of purpose promoting legislation of this kind. My point is—and the experience of other industries from which we should profit will show—that such contractor licensing legislation, whatever its avowed purpose, has often had the effect of:

- (1) Restricting competition,
- (2) Allocating business,
- (3) Increasing costs, not infrequently through formal or informal, direct or indirect, price-fixing agreements.

Actions on the part of contractors which bring about any of these results are, as you well know, violations of the laws of the United States, subjecting the violators to substantial penalty. The anti-trust prosecutions of the Department of Justice and the complaint proceedings of the Federal Trade Commission, against groups of contractors, too numerous to cite, are examples proving the point. Even though the proponents of contractor licensing, seeking to minimize their competitive difficulties through so-called "remedial legislation," approach the problem with the most high-minded intent, in practical operation the human element can and does knock altruistic theories into a cocked hat.

That "human element" can rationalize an exorbitant profit into a "fair profit," a competitor who can do a job at least as well at a lower price, a "chiseler," an examination so stiff or unfair as to discourage prospective competition as "reasonable and in the public interest," etc.

The fact is that contractor licensing legislation limits the number who can enter the field, tends to eliminate competition between contractors and gives existing contractors every incentive by agreement, expressed or implied, or by concerted action, to fix prices, allocate business, regulate output, and in general to control the market for their services.

The following may help to illustrate what I mean:

(a) There are some who claim that contractor licensing, with examination, is not merely a scheme for weeding out incompetent or dishonest

ordinances is another customary method of forcing contractors to obey the rules and regulations.

Further, injunction procedure can always be used against contractors who violate municipal or state inspection laws. This is a simple and inexpensive procedure, compared with the administrative costs of establishing boards to conduct state or municipal examinations and issue licenses.

In any case, in the course of time, the threat of suspension or revocation of licenses is very likely to lose all meaning, unless that procedure is used with absolute uniformity and fearlessness and without discrimination.

In brief, inspection laws can provide ample protection for the public interest, they are easier and less expensive to enforce, and they are not nearly so subject to abuse.

### 2. Examination Assures Competency

Proponents argue that an examination before the granting of a license is needed in order to assure that only those who are competent will be permitted to engage in the contracting business.

This argument is worthy of little weight. A man's competency to direct the installation of equipment cannot be conclusively, or even approximately, determined by an examination. The average contractor is years away from his school days. A written examination could be a nightmare to him, for often he has lost his facility for answering a written examination. An oral, or partially oral, examination could be easy to a glib but incompetent or dishonest contractor, and yet throw a perfectly-competent and honest contractor into tongue-tied confusion.

### EXAMINATIONS 'INADEQUATE'

Competence and integrity are matters which can be measured only as a result of continued performance. Installations made by a contractor and inspected by municipal, state, or other inspectors, will soon determine whether or not a contractor is both competent and honest.

Aside from the inadequacy of the examination device, the argument that competency shall be tested by examination is weakened further by the fact that its proponents are not interested in testing the competency of every one.

When contractor licensing ordinances or laws are adopted, it is common practice to issue licenses, without examination, to all contractors then in the business in the area. Perhaps in this practice we glimpse the real reasoning of some proponents of contractor licensing! Existing contractors are admitted to the charmed circle, irrespective of their competency. If it were not so arranged, there would be vigorous opposition to any proposed licensing bill or ordinance.

### 3. As Necessary As Licensing Doctors

Proponents argue that the licensing of contractors is just as essential as the licensing of doctors, dentists, pharmacists, etc.

There are, of course, several answers to that argument. It is clear that the opportunities for abuse by unscrupulous and incompetent professional persons is much greater than in any other field of human activity. From the very nature of their work, involving as it does a high degree of confidence by those who seek their services, professional men are in a position to do untold harm if they are not properly qualified.

It is, therefore, necessary to determine in advance, as far as it is possible to do so, whether persons seeking to engage in the practice of a profession are properly skilled and of good character.

In contrast, the work of contractors is completed and can be inspected and the quality of the installation, from a safety, fire, or health standpoint, determined before the installation is put into use. In the latter case, an adequate inspection system can insure all necessary protection to the public.

There is, therefore, a marked contrast between the licensing of professional people, especially in the field of health, and the licensing of businessmen, such as contractors, whose work can be inspected before the results are used.

There are other means of obtaining the advantages claimed for contractor licensing—means which are simpler and less expensive to the municipality or state and which provide more revenue. They are simpler and less expensive to the contractors and their customers, also. They are less

## Chicago Engineer States His View



Called upon for comment at panel discussion on licensing during recent NARC convention, Gerald Gearon, supervising mechanical engineer of the Boiler and Refrigeration Inspection Department of the City of Chicago, says the interests of the public might best be served by a strong municipal department of inspection, rather than by licensing. Listening are two members of the five-man panel, John C. Rehard, chief refrigeration safety engineer, Detroit (left), and Leslie D. Price of Nema.

discriminatory as between contractors of different sizes. These means are entirely adequate from the point of view of safety, fire prevention, and health. I have in mind:

(a) Inspection of installations by municipal, state, fire insurance, or other inspectors.

(b) Education of contractors and the public on fire prevention, safety, and health—a normal function of such inspectors.

(c) Fining of contractors for violation of inspection laws.

(d) Where necessary, use of the injunction procedure against contractors who violate an inspection ordinance or law.

In summation, I am opposed to contractor licensing in the air conditioning and refrigeration industry because:

(a) Licensing of contractors tends to limit free and competitive enterprise and create barriers to interstate and inter-community commerce. This would be true even if licensing were capable of being perfectly administered—which it is not.

(b) Inherent in contractor licensing is the opportunity for abuses such as the limiting of competition by excessive fees, through unreasonable requirements, and through administration by examining boards and enforcement agencies which may be less than impartial. This is a very real danger.

(c) Contractor licensing opens the door to illegal practices by existing contractors in the form of agreements and understandings or con-

certed action to fix prices, divide territories, and otherwise control the market for their services. The numerous prosecutions by the Department of Justice and complaints by the Federal Trade Commission against contractor groups show that this is not a remote possibility and that it is injurious to the public.

(d) Licensing charges must be reflected in higher over-all costs of air conditioning and refrigeration installations to the buyer, without any assurances of quality of equipment, proper installation, and safe operation of air conditioning and refrigeration installations.

(e) Contractor licensing will be, as it has been in other businesses, a retarding influence on the growth and progress of our industry, through limiting the competitive spur to render better service at lower prices.

Better products and services at lower prices are essential if we are to reach the broader markets our industry must have to progress. In today's buyers' market, the refrigeration and air conditioning industry faces increasingly-stiff competition for its share of the consumer's dollar.

(f) There are alternatives to contractor licensing which are more effective and subject to less abuse. A system of installation permits and inspection, well-conceived and impartially administered, is much to be preferred to contractor licensing from all viewpoints—that of the public, the municipal and state authorities, and the industry as a whole.

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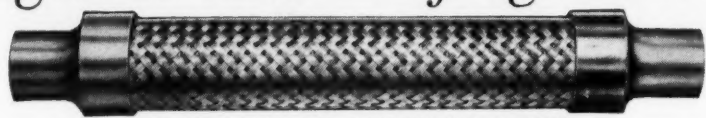
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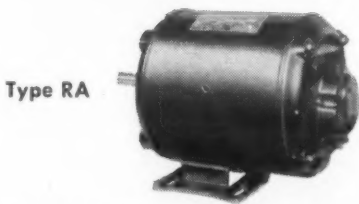
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## Licensing Offers Contractors a Check On Proper Operation of Safety Code

"Preparing a Refrigeration Contractors Licensing Code"

By Nathan Edelstein, Refrigeration & Air Conditioning Guild, New York City

A licensing code is divided up into two sections: One is the safety code, and the other is the administrative section of the code. There has been a good deal of confusion in the minds of many people as to the actual intention of NARC with reference to the contractor-licensing program. I can say for the NARC that the thing that they're interested in is the administrative section of the licensing code only. I can say also for the NARC, that we believe a Safety Code, such as the ASA B9 code, is the one which we can and do support in preference to all other safety codes, subject however to local law.

We are in the main only interested in seeing that the contractor who installs the equipment is qualified, both from a technical engineering viewpoint and from a business financial viewpoint. We feel that if any contractor does a job which is not in consonance with good accepted practice and usage, he does not only hurt himself but he hurts everyone in the industry.

It has been my experience, that whenever a contractor has appeared in a law court, he has had two counts against him, not because he, the individual, is at fault, but because of the general reputation of the refrigeration contractor. It is for this reason that the NARC has advocated a licensing code for contractors. It is quite useless to provide a safety code without a licensing code to give the proper officials the opportunity to check on the operation of the safety code. It's just as improper to have a licensing code without a safety code.

### Code Should Provide For Rigid Examination

This code should provide that the license holder shall be a qualified technician, who will have passed a written examination, a practical examination and a character examination. We should also like to see that this contractor is financially capable of carrying out the terms of a contract, when he makes one, and to carry out the terms of his guarantee, when he gives one.

Since we are interested only in the administrative section of a contractor licensing code, we will now proceed to outline a method or methods of preparing a licensing code. First, we must determine the law of the locality where such a code is desired. The Constitution of the United States has given to the various states, authority over the health and welfare of the people of the state. Therefore, any subdivision of a state, such as a county, city, town, hamlet or village, is under the direct supervision of the state.

In some states, general permission for cities to pass such licensing laws is granted by state constitutions. In many states, however, the state reserves a right to itself to pass licensing laws. Sometimes, a city has been given authority to pass such licensing laws and subsequently due to the right reserved by the state, the state has passed a state licensing law which has then superseded the city licensing law. Such a case occurred in the State of California.

In large cities, it is customary for the State to give the city a home-rule government; in other words, the city governs itself. Of course, we realize, too, that licensing refrigeration contractors comes under the police powers of the city and state. Some localities provide for licensing by the commissioner of safety, some by the police commissioner. However, whichever official or city council has authority to promulgate such a licensing code, the first thing that an association or group desiring a

standard licensing code for refrigeration contractors, should do, is to go to see that official or that council or that legislative body and inquire about a licensing code similar to that of the refrigeration contractor.

Some of the various types of licensing now in existence are licensed electricians, licensed plumbers, etc. Of course, you realize the reason for this is to write your licensing code in a similar manner and in a similar form as previous codes have been written in other fields of endeavor. Before beginning to write a licensing code, it would be quite a wise thing to provide the licensing code committee with a copy of codes of as many other cities and states that have licensing codes to use as guides. The committee should read all the codes thoroughly and the features that the particular locality requires should be incorporated in the code.

### NARC Has Suggested Form For Use on Local Level

The NARC has set up a standard licensing code, but we appreciate very well that the different cities and states of the U.S. would not and could not pass the same type of law that the standard code provides for, and so it is in a suggested form and used as an outline only. When the features and the various sections of the article have been determined, they should be set down and submitted to the members of the committee for their study and then an agreement should be reached as to the various sections to be incorporated in the code.

I would very strongly advise that once you have the thoughts and ideas you wish to have in the code, that you engage an attorney to help you set up the code in such technical form or manner as will be acceptable to the City, State officials or the City or State Legislators when they go to consider the code for passing. When this has been drawn up, copies of the code should be mailed to each member of the association or to each member of the group interested in such code.

(Concluded on next page)

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## A Question from the Floor



Audience participation in panel discussions during the recent NARC convention in Chicago was at a high level. One of the numerous listeners who rose to ask a question or offer a comment was A. M. Palen of St. Paul, who was later re-elected treasurer of the association.

## Winning Support for Licensing Code--

(Concluded from preceding page)

After final form has been agreed upon, sufficient support should be built up. By that I mean, a mere handful of men would find it very difficult to have any kind of law passed. It must have the general support of the entire industry before a law can successfully be passed. In the case of the refrigeration contractor, it would seem wise to consult and confer with other segments of the industry, other associations, such as the ASRE, RSES, and the jobbers' and manufacturers' groups, if they are interested.

We have at all times maintained in NARC that we are not hiding the fact that we should like to see licensing a universal practice and, therefore, we at all times publicize the fact to the whole industry. If you can convince all the segments of the industry, and we believe that you should, prior to the bill being presented to the proper officials or to the legislative body, the success of the licensing code is a foregone conclusion.

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You must always remember that a licensing code should not be an eliminating contest for purposes of eliminating competition. That is the wrong attitude to take, and if that attitude is persisted in, the success in passing of that bill is definitely going to be nil. The licensing code should be one that will eliminate only the "know nothings" and the "do harmers," the "90-day wonders," those with no mechanical aptitude, and particularly those with no refrigeration mechanical aptitude.

The code should not contain a high licensing fee provision. It should only provide for a licensing fee that will pay for the operation of the department giving the examinations for the license. The code should provide for inspection of the installation, as well as the examination of the contractor. The code should provide teeth so that a violation of any of the rules and regulations will be promptly and fittingly punished. When the bill is ready for public hearing, as is the usual case, organize your committee and your association and make sure that a representative group is down at that public hearing, to give support to the passage of the code.

There have been instances where licensing codes have been proposed, as a matter of fact many important laws, and not one single person of the general public has been interested enough to come down to the public hearing. Those with a special interest, those who did not want to see it passed were there, Johnny on the spot, but those who should have had an active interest in it did not show up.

If you are interested in seeing that this law is passed, and that a licensing code is promulgated in your city or state, see to it that active support is given to its passage. Do not come up with the excuse that you're too busy, that you have an important engagement, and besides there will be plenty of others there, so that you're not needed. In our opinion, you would save yourself a lot of trouble and headache, in the future, if you see to it that this contractors licensing code is passed.

When this bill is sent to a legislative body, it is necessary that one

of the members of the legislature shall introduce the measure. A constituent should approach one of the members of the legislature and if he (the legislator) is convinced of the advantage of passing such a licensing code, he will introduce the measure in the legislature. Generally, what occurs is that the bill is then sent to either the committee on Ways and Means, or a committee on General Welfare, or any other such committee that has to do with the health and welfare of the locality or of the state. It is wise, therefore, to follow the bill from its introduction to the general committee. It is wise to contact the chairman or the clerk of the committee, so that you may appear before them to testify.

If there is a public hearing for the committee, be sure that you have a representative group there. In many instances the chairman of that committee will be very pleased to have some aid and assistance in determining the value of the bill as to whether it should be reported out or not. In many instances, the chairman does not know to whom to go for specific information, on a particular subject matter of the bill, and he would certainly welcome any information he received. If the bill is reported out successfully to the general body, if there is a public hearing, be sure that members of your committee and of your organization are there.

Once the bill has become law, all efforts should be made to obey the various regulations and sections of the law. What occurs is that the bill that is reported out and actually passed is not the same as was reported in to the committee and introduced by the legislator. Be it as it may, if the bill is somewhere in the right direction, carry along with the verbatim dictates of that law, and then after seeing how it works out in practice, then begin to study the amendments and corrections that should be made to the licensing code and proceed as if a new bill were to be passed.

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## Bolton Presents NARC Stand on Licensing, Examinations, and Invites Discussion

By Frederick R. Bolton, Executive Secretary and Counsel,  
Refrigeration Contractors Association of Detroit,  
Moderator on the Panel Discussion on "Licensing"

You are familiar with the controversy which is now raging across the country regarding the establishment of codes and requirements of registration or licensing of refrigeration contractors. Since the NARC through its board of directors went on record as advocating licensing of refrigeration contractors and set up the necessary machinery to render assistance to any group of contractors or to any community desiring help in establishing such codes, certain segments of the industry have taken it upon themselves to support the conflicting side.

Thus, the convention committee considered that it was of paramount importance that the subject of licensing be brought before this convention and discussed.

In order that we may clarify the issue and to some extent state the position of the NARC on this problem, I lay before you the following facts.

We all realize that there have been a number of claims of abuses under some of the licensing laws now in existence. Where this is the condition, we would like to determine, if possible, whether it is because of poor laws and bad enforcement or because of the basic philosophy of the law itself.

We all realize that this is an all-industry problem. From time to time during the past year, we have asked other segments of this industry to give us some assistance on this difficult problem with rather negative results.

Whenever the proposition of licensing, and more particularly the requirements of examination to obtain that license, is put before any group of American business people, there is a natural resistance because the American people and American business in particular, do not like to be policed. However, from experience developed over several centuries, it has become well recognized that in every legitimate business, there are those on the ragged edge or fringe who, by trying to use the flag and banner and reflect in the glory or reputation of the legitimate business, do, in their lecherous way, collect revenues for "slip-shod," unsatisfactory and dangerous manipulation, jeopardizing thereby the safety of their own clientel in particular and that of the public in general. This is true, be it in the field of medicine, law, plumbing, refrigeration, or what have you.

In the fields of law and medicine, there have long ago been established requirements which are necessary for the practitioner to meet and qualify in regard to before he is allowed to practice his wares and hold himself out to the public as qualified. As time has gone along, the various other professions and skilled fields have seen the light and come to the conclusion that for the protection of their business it is necessary to require certain standards in the same manner as demanded by the so-called learned professions.

The Detroit area is proud of its new Safety Code with its examination and licensing provisions. Detroit first had licensing of refrigeration contractors as part of its ordinance in 1937. For eight years, Detroit operated without examination provisions, and it was not until September, 1945, that this was made part of the ordinance. Why? We hope this will be brought out in the discussion today.

That the refrigeration industry is a young industry is well recognized from the fact that it has for years been dependent upon other trades in connection with business practices, union matters, and legislation. It has now come into its own and is standing on its own feet. Why should it not begin to have all the advantages of the other businesses? Who is there to say that it shall be different? Are there real reasons? Or, is it merely in the method of the approach to that end that the differences of opinion in the industry have arisen over this question? We hope the panel discussion this morning will bring forth all significant points and bring some tangible results.

## Audience Debates Need for, and Result Of Gov't Regulation of Contractors

Chicago Inspector Says Purpose Must Be Safety

Comment (Henderson)—"Licensing must be discussed in its general aspects. In Detroit we have almost optimum conditions and John Rehard is outstanding in his field."

Comment (Edelstein)—"Rehard, with all due respect to him, isn't the only public official capable of administering a code?"

Question (from a contractor)—"Henderson indicated that licensing might put people out of business. But I have seen an incompetent contractor make a poor installation in a meat market and put the latter out of business. Isn't licensing necessary, then?"

Answer (Henderson)—"Proper inspection will take care of it, generally."

Comment (from the same contractor)—"I say that the meat market or grocery operator must put his faith in the refrigeration contractor. I know of one job that was safe enough but it was too small to do the job. I don't know how inspection for safety will cure that."

Answer (Henderson)—"I don't see how licensing would take care of the proper sizing of a job."

Question (Warren Farr)—"Would it be feasible to substitute registration and bonding of contractors so that financial responsibility could be established and the public and customers protected?"

Answer (Henderson)—"There's a parallel there, but an off-the-cuff guess is that there are the same elements in each."

Comment (Rehard)—"Essentially our first licensing provision back in 1937 was pretty much just registration, but it didn't work out."

Comment (Templin)—"We had 15 years' experience with registration and bonding, but it was not satisfactory. So this year we adopted licensing. I'll put the blame directly on the contractors themselves. The great majority don't cooperate. The big problem is policing. The bond was dropped when licensing was adopted in Los Angeles last January."

Comment (Gerald Gearon, supervising mechanical engineer, boiler and refrigeration inspection department, Chicago)—"The purpose of any law must be public safety. I would say that we are basically opposed to contractor licensing for one reason: this is America. You can't stop a man from going into business. If licensing is the way to get public safety in Detroit or Los Angeles, I'm

for it. I think contractors should get behind getting more inspectors. Contractors should go before city officials and show the necessity for getting more men."

Question—"Is it practical to engage the great number of inspectors that a department would have to have? Wouldn't the inspector system hold up contractors?"

Answer (Gearon)—"I don't believe any contractor in Chicago has ever been inconvenienced by waiting for an inspector."

Comment (Rehard)—"Basically, we in Detroit are not in favor of licensing, but we didn't get the co-operation of contractors in reporting installations. So we had to resort to licensing to find out where the jobs went in. If you don't get 100% cooperation, you get a policing problem. That's what takes men. If you can get the men, you can cover policing okay."

Question (Price to Rehard)—"How has the examination procedure worked out in eliminating unscrupulous contractors?"

Answer (Rehard)—"The gyps have to be weeded out through the process of law. Of those licensed by examination, very few cases were not competent. Examinations are not 100% satisfactory, but examinations plus experience are good. No licenses have been revoked in Detroit, although one contractor's license was suspended for 30 days."

Comment (Henderson)—"We are interested in the welfare of the whole business. We aren't in two separate camps. We must all work together."



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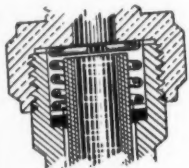
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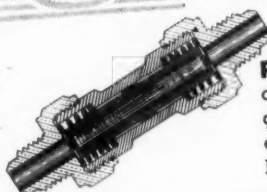
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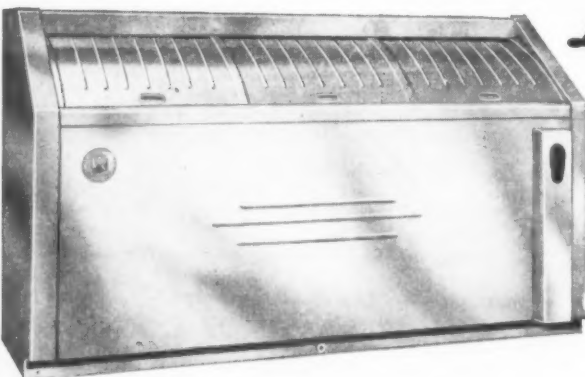
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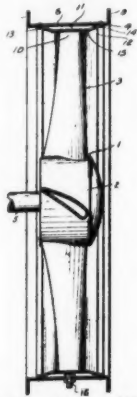
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## PATENTS

Week of August 24  
(Continued)

2,447,987. **SEAL FOR FANS.** Robert D. Moore, Kansas City Mo., assignor to the Moore Co., Kansas City Mo., a corporation of Missouri. Application Dec. 29, 1945, Serial No. 638,189. 4 Claims. (Cl. 230-120.)



1. In combination with a fan having blades rotatable within an annular air control member encircling the fan blades at the tips thereof, space closing means carried by the control member in encircling

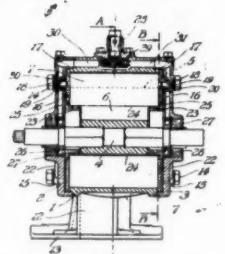
ing relation with the fan and in initial contact with the tips of said blades, said space closing means being composed of an easily tractable material for sufficient displacement by the fan blades to permit free rotation of the fan and having low elasticity to maintain said displaced position for substantially closing the space between the tips of the fan blades and the control member.

2,447,958. **VARIABLE PITCH V-TYPE PULLEY.** William M. Mueller, Denver, and John E. Heckethorn, Little, Colo., assignors to the Gates Rubber Co., Denver, Colo., a corporation of Colorado. Application Dec. 26, 1946, Serial No. 718,418.



1. A pulley comprising, in combination, a tubular cylindrical hub having its outer surface provided with flat top threads, machined to form a cylindrical surface providing a bearing area, two annular flanged members secured to the hub, one being positioned near an end of the hub, means for securing the last named flanged member against accidental movement relative to the hub, the other annular flanged member having a cylindrical, tubular sleeve extending outwardly and provided on its inner surface with a length of thread to engage with the threads on the hub, the sleeve being provided with a plurality of longitudinal, angularly spaced slots, a split locking ring enclosing the sleeve, and means comprising a screw for forcing the locking ring against the outer surface of the split sleeve and the inner surface of the sleeve against the flat outer edge of the threads on the hub.

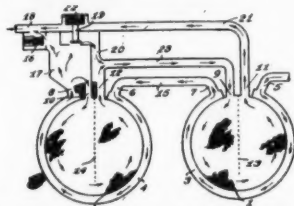
2,447,961. **ROTARY BLOWER, COMPRESSOR, AND EXHAUSTER.** John Rodway, Lincoln, England. Application March 2, 1944, Serial No. 524,718. In Great Britain April 29, 1943. 2 Claims. (Cl. 230-152.)



1. A rotary blower or exhauster, comprising a casing constituting a stator having fluid inlet and outlet ports, a rotor mounted eccentrically within said stator, a plurality of vanes mounted to slide radially in said rotor and contacting the walls of the stator, sealing plates dis-

posed respectively at the ends of said rotor and having apertures therein concentric with the stator, means for maintaining said sealing plates in yieldable contact with the end edges of said vanes, and cam rings each mounted concentrically within the stator casing and having a cylindrical portion extending into the respective end of the rotor and engaging beneath the inner edges of the vanes and an outer flanged portion whose surface makes contact with one end wall of the stator and whose periphery rotatably engages the edge of said concentric aperture in the adjacent sealing plate.

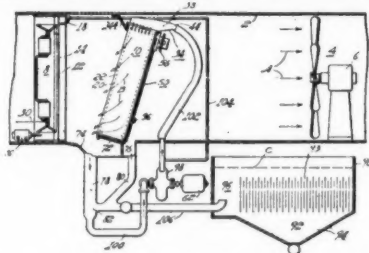
2,447,970. **APPARATUS FOR COOLING OR ATTEMPERATING OIL OR OTHER LIQUID.** Robert J. Wareing, Birmingham, England, assignor to Imperial Chemical Industries Limited.



A cooling device of the kind described, comprising cooling matrices providing a two-stage cooler, each comprising a plurality of thin-walled metal tubes disposed in honeycomb formation within a suitable casing having an external jacket, each of said matrices and said jackets having an inlet and an outlet, connections whereby hot fluid entering the inlet in one of said jackets flows through both jackets in series to the first-stage matrix inlet, a conduit connecting the first-stage matrix outlet to the second-stage matrix inlet, an outlet conduit for fluid leaving the second-stage matrix outlet, a by-pass conduit connecting the inlets of said matrices, a temperature-controlled valve in said by-pass conduit, thermostatic means operative upon sufficient rise in the temperature of fluid flowing through said outlet conduit, to cause said valve to reduce flow of fluid through said by-pass conduit connecting the first-stage matrix inlet with the second-stage matrix outlet conduit, and a pressure-controlled valve normally closing said second by-pass conduit but arranged to open the same upon development of sufficient fluid pressure in that portion of said conduit between said pressure-controlled valve and said first-stage matrix inlet.

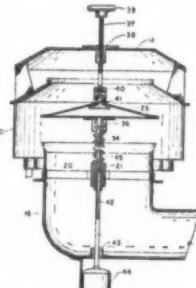
Week of August 31

2,448,046. **PRECIPITATOR.** Gaylord W. Penney, Wilkinsburg, and George W. Hewitt, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., East Pittsburgh, Pa., a corporation of Pennsylvania. Appli-



1. A system of a type described, comprising an electrostatic dust-precipitator for cleaning a gas flow, comprising gas purifying means comprising a plurality of spaced dust-collecting electrodes; a loop-circuit including therein: a pump, said dust-collecting electrodes, a nozzle-device connected to the discharge end of said pump and movable across said dust-collecting electrodes, a trough means extending below said dust-collecting electrodes, and a piping means between said trough means and the inlet of said pump; distinct container means outside of said loop-circuit for cleaning and holding cleaned liquid for circulation in said loop-circuit, said loop-circuit extending above said liquid-holding means; a piping connection between said container means and said loop-circuit; and operable for operating said pump during spaced periods and for moving said nozzle-device progressively across said dust-collecting electrodes; said piping connection being open during pump operating periods and between such periods.

2,448,048. **RAIN AND SPRAYPROOF VENTILATOR.** Carl W. Porter, Alexandria, Va.



3. A device adapted for use in ventilating systems to prevent water and other entrained material from passing through comprising a casing provided with an opening for the intake of air, a duct projecting into and connected to said casing, the bottom of said casing, exteriorly of said duct, adapted to trap and remove water and other material collecting thereon, an assembly of a rotary deflecting plate rigidly attached to one end of stub shaft within said casing, a bearing mounted with and axially of said duct for rotatably supporting said stub shaft, the said stub shaft being longitudinally movable with respect to said bearing, a coil spring surrounding said stub shaft positioned between said bearing and said deflecting plate adapted to bias the latter into operative position, driving means slidably connected to the other end of said stub shaft below said bearing and means axially connected to one end of said assembly for moving said deflecting plate into and out of closure relationship with respect to said duct.

(To Be Continued)

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SALES OR application engineer: Over 13 years' experience and thoroughly familiar with application engineering of hermetic and open type units to 25 hp. Also controls. Considerable field work. Also experience as sales representative. Graduate engineer. No objection to some traveling. Best references. Available immediately. BOX 3041, Air Conditioning & Refrigeration News.

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MANUFACTURERS' REPRESENTATIVE for Ohio, Indiana, Kentucky and Michigan open for products to sell to jobbers and manufacturers. Ten years selling experience in refrigeration and air conditioning. BOX 3045, Air Conditioning & Refrigeration News.

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ORLANDO, FLORIDA sunshine. Opportunity for an experienced commercial refrigeration salesman who can sell. This is a lucrative position for a go-getter, who is interested in year around summer weather, with one of Florida's most aggressive Frigidaire distributors. WATERS EQUIPMENT CO., 1215 West Central Ave., Orlando, Florida.

SALES REPRESENTATIVE wanted by well established midwest manufacturer of automatic control valves, fittings, driers and accessory items for refrigeration and air conditioning. Territory open is metropolitan New York City and New York State. Salary, bonus and expenses. Write full particulars including past experience, record of employment and salary requirements. BOX 3019, Air Conditioning & Refrigeration News.

OLD ESTABLISHED York distributor located in North Carolina has opening for experienced commercial refrigeration sales manager to assume complete responsibility for formulating and executing sales activities. Only man thoroughly experienced in refrigeration and air conditioning who has proven executive and sales ability will be considered. The man we want now has responsible sales managerial position and is successful but wants to go further with an organization with unlimited possibilities. Liberal salary plus override on sales volume. Give full details of experience and qualifications. Interview will be arranged. BOX 3035, Air Conditioning & Refrigeration News.

OLD ESTABLISHED York distributor located in North Carolina has opening for experienced refrigeration and air conditioning sales engineer. Must be capable of passing examination state board of engineers and securing license in air conditioning engineering. If not now a resident of N. C. interim license may be arranged pending examination. Write stating experience, qualifications, and salary and commission expected. BOX 3036, Air Conditioning & Refrigeration News.

## EQUIPMENT FOR SALE

SEALED UNITS rebuilt and exchanged. Prompt service on Coldsport (sealed & semi-sealed), Chieftain, Gale, Tecumseh, Norge and many others. One year guarantee. Write for price list and shipping instructions. BRIGHTON, 3906 Joy Rd., Detroit 6, Michigan.

SUBJECT TO prior sale: Hermetic Chieftain units— $\frac{1}{4}$  H. P., \$44.50;  $\frac{1}{2}$  H. P., \$48.50. Other well known hermetics:  $\frac{1}{4}$  H. P., fan cooled, \$52.50;  $\frac{1}{2}$  H. P., fan cooled, light duty, \$57.50;  $\frac{1}{4}$  H. P., fan cooled, heavy duty, \$59.50;  $\frac{1}{2}$  H. P., fan cooled, \$69.50. Open units, standard makes:  $\frac{1}{4}$  H. P., \$54.50;  $\frac{1}{2}$  H. P., \$64.50;  $\frac{1}{4}$  H. P., \$84.50. Above prices quoted on lots of six. All open units are 60 cycle, single phase. All above units new, carrying factory warranty. Write for unit list. Penn type 260 Apol low pressure control, \$4.25. Penn type 262 Apol high pressure control, \$4.25. Minneapolis-Honeywell dual pressure control, \$4.50. Detroit Lubricator low pressure control, \$4.25. G. E. blower fan motor with 10" fan, \$4.50. Superior heat exchanger, 13" over-all,  $\frac{3}{4}$ " x  $\frac{3}{4}$ ", \$4.75. Mueller heat exchanger, 14 $\frac{1}{2}$ " over-all,  $\frac{3}{4}$ " x  $\frac{3}{4}$ ", \$5.00. Kramer Trenton panel blower complete,  $\frac{1}{2}$  ton, \$30.00. Superior master drier  $\frac{1}{4}$ " flare x  $\frac{1}{4}$ " x  $\frac{1}{2}$ ", 75¢. U. S. "Freon" gauge, 4 $\frac{1}{2}$ " face, 30" vac., 150# or 300#, with corresponding temp. scale with red warning hand and mounting holes, \$4.50. Scientific Instrument Co. dial thermometer, 4 $\frac{1}{2}$ " face, minus 40 to plus 120, 5 ft. tube, \$4.50. 1 set U. S. "Freon" gauge, 2 $\frac{1}{2}$ " face, 100# compound and 300# pressure, temp. scale, recal. and mounting holes, \$3.50. Ranco type KW-412 cold control complete, \$4.00. American Injector oil separator,  $\frac{1}{2}$  ton, \$3.50. Cold plates: 1—30" x 55", 2—30" x 64", 3 to a set, \$35.00. 6—5 lb. cans Davison refrigeration silica gel, \$6.00. 1—5 lb. can Davison refrigeration silica gel, \$1.10. Crouse-Hinds vapor proof refrigerator light, with guard, \$2.50. WALTER W. STARR, 1207 George Street, Chicago 13, Illinois.

FOR SALE, domestic and commercial refrigeration and air conditioning business in southern California. Inventory, plus \$1,000; approximately \$32,000. Good lease. Cheap rent. Complete machine and service shop. Dairy, winery, citrus and farm territory. Profitable all year business. Owner retiring. Terms to right party. BOX 3032, Air Conditioning & Refrigeration News.

7 $\frac{1}{2}$  AND 10 H.P. General Electric CM38T "Freon" condensing units at 10% less than distributors cost, current models, new, crated. Fill your requirements while our stock lasts. BOX 3042, Air Conditioning & Refrigeration News.

## BUSINESS OPPORTUNITIES

RESTAURANT, HOTEL and bar supplies department for sale of Wright Refrigeration in San Diego, California. A truly wonderful opportunity for someone experienced in restaurant and hotel supplies business. Get the details, you will really be surprised that such an opportunity is available. WRIGHT REFRIGERATION, 4025 Pacific Highway, San Diego, California.

MIAMI, FLORIDA—a leading refrigeration, air conditioning, television, and appliance sales and service establishment—in same Miami location ten years. Grossed \$150,000 and netted \$20,000 last year. Will sell for \$7,500 to cover truck, equipment, and improvements plus merchandise inventory at cost—about \$8,000. BOX 2992, Air Conditioning & Refrigeration News.

REFRIGERATION AND household appliance service shop in the Calumet region of Indiana for sale reasonable. Reason for selling is sickness. Doing over \$3,000.00 monthly. Several dealer contracts and factory authorizations. Low rental in large shop on U. S. highway. Tools and pickup truck included. Will inventory stock. BOX 3040, Air Conditioning & Refrigeration News.

ESTABLISHED COMMERCIAL refrigeration business, doing \$50,000.00 business annually. Located in New Orleans. Will sell one-half interest in business to qualified sales engineer. Applicant must have excellent sales ability and be willing to work at it. \$5,000.00 will purchase one-half interest. In reply give age, experience, and background. BOX 3044, Air Conditioning & Refrigeration News.

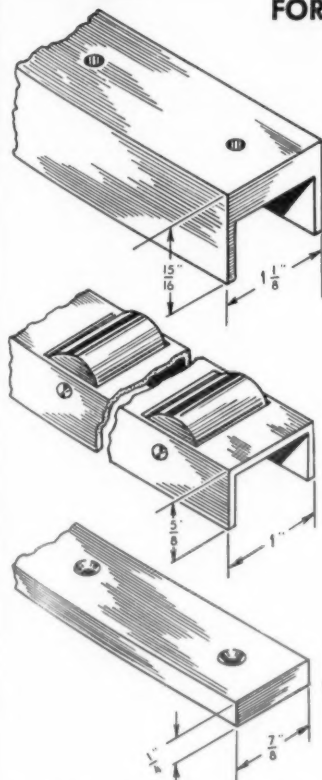
New Catalog!

Free to Western States Refrigeration Trade.

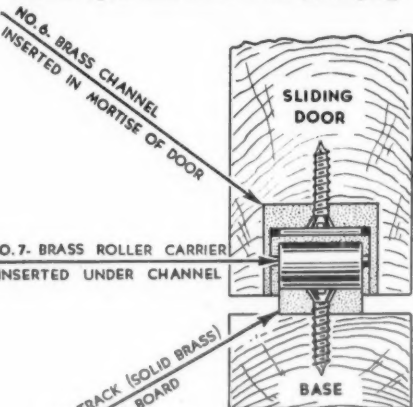
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# KASON HEAVY-DUTY ROLLER TRACK

FOR HEAVY DUTY SLIDING DOORS, FLORIST BOXES, ETC.



This Roller Track consists of three, sturdily constructed parts: a channel, a roller carrier, and a lower track all made of solid brass. Their installation (as shown in the accompanying illustration) is very simple. The three generously proportioned parts nest together perfectly, align the door true and roll it open and shut with gratifying ease.



An added and desirable feature of this Roller Track is the hinged Roller Carrier furnished. (See illustration alongside.) This Carrier, hinged at the center, simplifies assembly of the box and also permits removal of the Roller Carrier without removal of the door, if it becomes necessary to clean.

WRITE FOR DESCRIPTIVE LITERATURE

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127-127 WALLABOUT ST., BROOKLYN 6, N. Y.

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Made from heavy duty rayon reinforced neoprene hose. Exceptionally flexible and sturdy; will permit small radius bends. 36" lengths. Will withstand temperatures to -40 degrees F. and pressures in excess of 1000 lbs. per square inch. Low original cost and high refrigerant resistance means long time use and resulting economy.

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Type B—Quick-Coupler



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12-13-48



## Steady Demand Seen--

(Concluded from Page 1, Column 4)

change quickly after Jan. 1, he said: "We know there is a vast unfilled demand for almost every kitchen and laundry electrical appliance, but the time has come when real sales effort is a necessity for the dealer who wants the sales."

The industry generally recognizes, he asserted, that the highly-competitive period, which is normal in the appliance business, has definitely arrived. He found that those dealers who are planning and stepping up their sales efforts are getting better results than those who are waiting.

Frequently, business goes to the brand that is best advertised and most aggressively sold, he stressed. That normal situation, he said, describes today's market.

## '49 May Prove 'Normal' Year for Refrigerators

CINCINNATI—The household refrigerator industry has a "normal market" of 3,500,000 units annually and the capacity, at present, to produce 7,000,000 units annually.

With the trend toward that "normal market" likely to start next year, the industry faces an era of sharp competition requiring vigorous selling.

So said John W. Craig, vice president of the Avco Mfg. Corp. and general manager of the Crosley division, recently.

The fact that break-even points for manufacturers are far in excess of what they were pre-war will give added intensity to the competitive campaigns to come, he indicated.

Craig asserted that the industry will produce 5,000,000 refrigerators this year. His own division, he said, is turning them out at the rate of 1,500 per day. A finished unit leaves the Crosley assembly line every 27 seconds, he declared.

Chiefly to sell these refrigerators, Crosley will increase its 1949 advertising budget by 60% and will use television for the first time, he indicated.

Refrigerators currently represent about 30% of the production turned out by Crosley, he declared.

According to Raymond C. Cosgrove, executive vice president of Avco, the Crosley division accounted for more than half of the \$98,957,130 in sales chalked up by Avco during the nine months ending Aug. 31.

"There's actually a dearth of trained salesmen just when we've got to get back to real selling," Craig declared. "There's a critical need for sound training in salesmanship."

## Production of Units Hits 770,490 at Kelvinator

DETROIT—Nash-Kelvinator Corp. and subsidiaries had net earnings of \$20,132,954 in the fiscal year ended Sept. 30, 1948, equal to \$4.63 per share on the 4,341,109 shares of common stock outstanding, George W. Mason, president, announced.

This compares with net earnings of \$18,097,697, or \$4.16 per share in the preceding year, he said.

Net sales were the largest in the corporation's history, totaling \$302,860,264 against \$250,262,581 in 1947.

Kelvinator and Leonard appliance production totaled 770,490 commercial and household units compared with 667,577 in 1947. Mason said that restricted supplies of sheet steel and enameling iron put a ceiling on production of all products.

Dividend payments of \$1.40 per share were made out of 1948 fiscal year earnings compared with 87½ cents per share in the preceding year.

## Cooperate for Expanded Production



The recently-completed arrangement under which Copeland Refrigeration Corp. will produce Kelvinator's open-type condensing units according to the latter's specifications is a unique instance of industry cooperation. Above are some of the top executives of the two firms (l. to r.): George Mason, president and chairman of the board of Nash-Kelvinator Corp.; Harry E. Thompson, president of Copeland; Frank Gleason, Copeland's vice president in charge of sales; and H. C. Patterson, Kelvinator's commercial refrigeration sales manager.

## Lively Sessions Feature ASRE Meeting--

(Concluded from Page 1, Column 5)

The effect of freezing rate on vegetables was discussed by Dr. F. A. Lee of Cornell university. The Domestic Refrigerating Engineering Conference held Tuesday afternoon with George K. Iwashita of Seeger Refrigerator Co. presiding was one of the liveliest sessions within memory, and for the first time in some years brought out some of the top household engineers.

The two main topics discussed were production and testing techniques, and refrigerator shelf problems. Some formal presentations were made, and General Electric gave a demonstration of a vacuum method for testing for leaks through the cabinet. Under the skillful direction of Iwashita, there was considerable participation from the audience.

Among those participating were Charles Harring of General Electric; Howard Chamberlin of Philco; John Cochran and O. E. "Doc" Norberg of Crosley; Milt Kalischer of Westinghouse; Walter Kuenzli of Servel; C. D. Harris of International Harvester; T. G. Coyle of United Chromium; Don Tichenor of the Tichenor Co.; P. J. Gallette of L. A. Young Spring & Wire; John R. Willard of Aluminum Co.; W. B. Pierce of Allegheny Ludlum; Russ Ayres of Seeger; R. C. Chalmers of Norge; Lloyd A. Staebler of Universal Cooler; D. J. Janos of G-E; and others.

Most important decision affecting society affairs was the vote of the ASRE Council to continue publishing *Refrigeration Abstracts* "without change on the same plane as before with some economies."

A few weeks earlier ASRE officials had tentatively agreed to change the form of *Abstracts* into more of an elaborate index with an expected saving of \$7,000 to \$8,000 annually.

The pros and cons of this were thrashed out at a lively meeting of the Publications Committee the second day of the annual meeting, which wound up by naming a three-man sub-committee to make recommendations to the council which met Wednesday afternoon. There the problem was handled with dispatch.

Offer of the Spencer Thermostat Co. to award \$50 each for the five best technical papers about motor protection presented over a period of years was accepted by the council.

D. C. McCoy of Frigidaire, chairman of the awards committee, announced the following awards for technical papers of the past year:

Wolverine Tube Div. award went to L. A. Staebler, Universal Cooler Div., International Detrola Corp., for his paper "Theory and Use of Capillary Tube for Liquid Refrigerant Control."

D. D. Wile, Refrigeration Engineering, Inc., won the award for the best paper delivered before a section for his talk on "Air Conditioning Coils—Their Heat Transfer Problems."

Formal approval of two ASRE standards was voted during the meet-

ing. Approved were No. 16, "Method of Rating and Testing Refrigerant Expansion Valves," and No. 26, "Recommended Practice for Mechanical Refrigeration Installations on Shipboard."

The 1949 annual meeting will be held at the Edgewater Beach hotel in Chicago in December of 1949, it was announced. The mid-year "cruise" meeting on the St. Lawrence and Saguenay rivers in Canada in June has been assured, and reservations are being taken up fast, it was announced by Rollin Lock of the Toronto section. The ship chartered for the cruise will accommodate 400. New national president of ASRE

is Burgess H. Jennings, chairman of the department of mechanical engineering of Northwestern university's Technological Institute. First vice president is John G. Bergdoll, general works manager of York Corp. Second vice president is Edward Simons, San Francisco consulting engineer. P. B. Christensen of Merchants Refrigerating Co., New York City, was re-elected treasurer.

New directors elected for a three-year term are: George I. Boone, New York City manufacturers' representative; Prof. A. L. Hesselschwerdt, Jr., Massachusetts Institute of Technology; Prof. R. C. Jordan, University of Minnesota; W. S. Smith, Johns-Manville Sales Corp., Cleveland; W. S. Woodside, United Cork Companies, Baltimore.

## HAJOCA



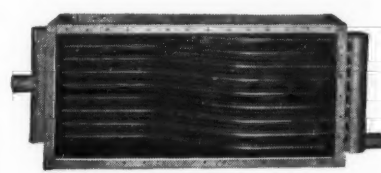
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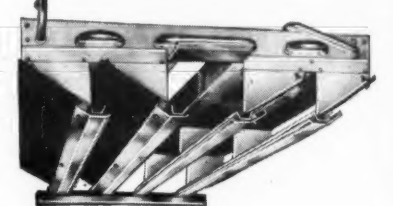
Pennsylvania: Philadelphia (Erie Ave. Branch) Lansdowne Reading  
Georgia: Columbus  
New Jersey: Camden  
Florida: Jacksonville  
Tennessee: Chattanooga



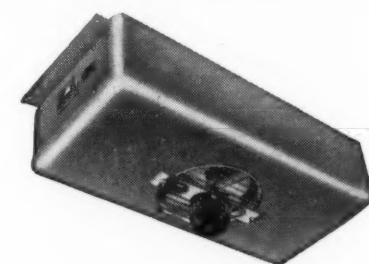
1 BUSH STEAM COIL — Available in five standard finned heights and variable lengths with casings to match corresponding DX coils.



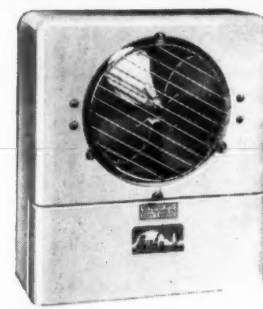
2 BUSH CEILING JET Maximum efficiency in minimum space. Less than 13" of head room in most models. All weight is on four hangers.



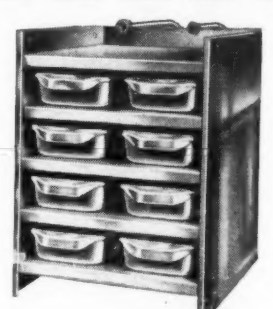
3 BUSH PLASTI-COOLER — Jet-black plastic baffles eliminate sweating . . . enhance appearance. Scientific pitch for maximum air discharge.



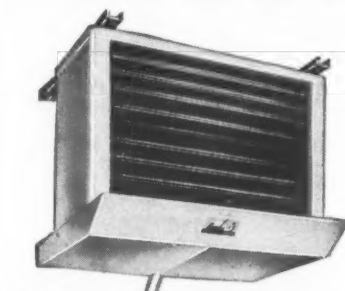
4 BUSH C-W UNIT COOLER Ceiling or wall mount. Case of galvaneal steel, with white enamel finish.



5 BUSH JR. WALL MOUNTED COOLER Compact . . . high capacity . . . easy to mount . . . accessible for service.



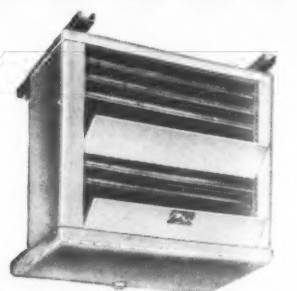
6 BUSH STANDARD ICE-MAKING COIL — A wide variety of models available with 12 to 48 pound ratings.



7 BUSH WATER DEFROST UNIT COOLER — Defrosts with tap water in less than five minutes. Cuts costs.



8 BUSH WALL MOUNTED PANEL COOLER Compact . . . ideal for low ceiling walk-in coolers . . . leaves head-room all free.



9 BUSH STANDARD UNIT COOLER Shorted hangers for easy installation. Models to fit all applications.

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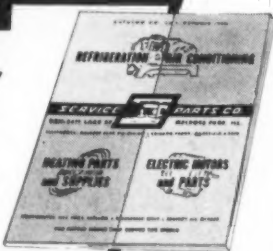
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